UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

LAMBETH MAGNETIC STRUCTURES, LLC, Plaintiff, v. SEAGATE TECHNOLOGY (US) HOLDINGS, INC., and SEAGATE TECHNOLOGY LLC, Defendants.	Civ. No. 2:16-cv-00538-CB **REDACTED**

DEFENDANT SEAGATE'S CONCISE STATEMENT OF MATERIAL FACTS IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT

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CONCISE STATEMENT OF MATERIAL FACTS

Pursuant to Local Civil Rule 56(B)(1), Defendants Seagate Technology (US) Holdings, Inc. and Seagate Technology LLC ("Seagate") submit this Concise Statement of Material Facts in support of their Motion for Summary Judgment.[1]

I. Background Facts

1. United States Patent No. 7,128,988 (the "'988 Patent"), entitled "Magnetic Material Structures, Devices and Methods," issued on October 31, 2006, and has an effective filing date of August 29, 2001. (Ex. 1, p. 1, Certificate of Correction (60).)

2. The '988 Patent claims priority to a provisional patent application that was filed on August 29, 2001. (Ex. 1, Certificate of Correction (60).)

A. Crystals

3. A crystalline material is one in which the atoms are arranged in an ordered, repeating three-dimensional pattern that extends over a long range atomic scale. (Ex.14, Ross 5/2/18 Rpt. ¶ 34; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 24; Ex. 17, Stach 7/16/18 Rpt. ¶ 32; Ex. 18, Clark 5/2/18 Rpt. ¶19.)

4. A non-crystalline material does not have a long-range ordered arrangement of its atoms or molecules. Non-crystalline materials are sometimes referred to as "amorphous." (Ex.14, Ross 5/2/18 Rpt. ¶¶ 34, 44; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 35.)

5. A "unit cell" refers to an arrangement of atoms that repeats throughout a crystal structure. (Ex. 14, Ross 5/2/18 Rpt. ¶ 36; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 25; Ex. 17, Stach 7/16/18 Rpt. ¶¶ 33-34; Ex. 18, Clark 5/2/18 Rpt. ¶ 21; Ex. 20, Coffey 5/2/18 Rpt. ¶ 33.)

[1] All "Ex." citations are to the Exhibits attached hereto and listed in the Appendix, unless otherwise noted. The materials cited herein are subject to the Stipulation and Order Regarding the Authentication and Admissibility of Documents. (Dkts. 120, 121.)

6. Crystalline materials can be classified as "single crystal" or "polycrystalline." (Ex. 14, Ross 5/2/18 Rpt. ¶ 34; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 24.)

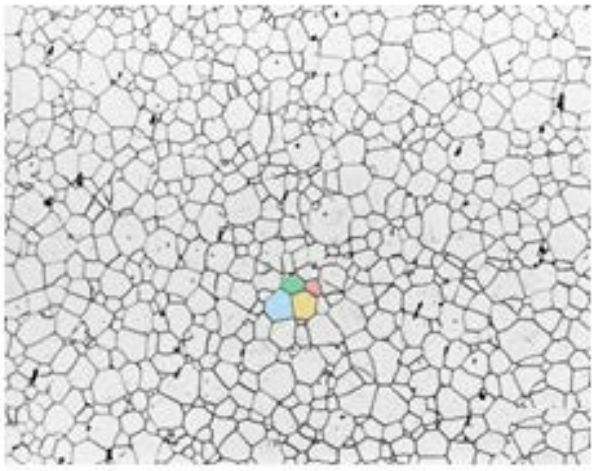
7. A single crystal is a crystal that has translational periodicity, which means that, starting at one atom in the crystal and moving in a given direction, another atom in the crystal will appear after some distance, *d*, and then continuing on in the same direction, yet another atom will appear again after traveling distance *d*. (Ex. 14, Ross 5/2/18 Rpt. ¶¶ 34-35; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 32-33; Ex. 17, Stach 7/16/18 Rpt. ¶ 58.)

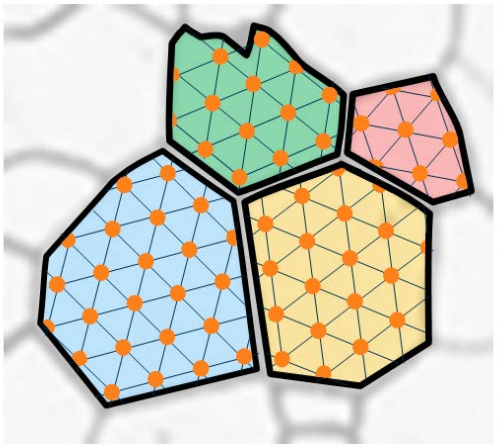
8. A polycrystalline structure is a structure that contains multiple different crystals. (Ex. 14, Ross 5/2/18 Rpt. ¶¶ 39-40; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 34; Ex. 17, Stach 7/16/18 Rpt. ¶ 43; Ex. 18, Clark 8/3/18 Rpt. ¶ 73; Ex. 20, Coffey 5/2/18 Rpt. ¶ 36.)

9. The different crystals in a polycrystalline structure are sometimes referred to as "grains." (Ex. 14, Ross 5/2/18 Rpt. ¶¶ 41; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 34, 57-59; Ex. 17, Stach 7/16/18 Rpt. ¶ 43.)

10. Dr. Coffey stated in his Initial Report: "Often the orientations of the crystals in a material having many crystals (known as a polycrystal or polycrystalline material) are random and all crystal orientations are equally represented." (Ex. 20, Coffey 5/2/18 Rpt. ¶ 36.)

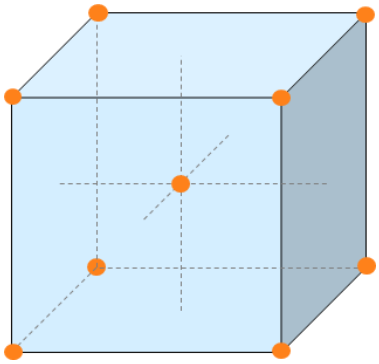
11. Dr. Ross depicts and discusses an example of a polycrystalline structure in ¶¶ 39-43 of her Initial Expert Report. Dr. Ross includes the follow two graphics as examples of a polycrystalline structure in her Initial Expert Report. (Ex. 14, Ross 5/2/18 Rpt. ¶¶ 41-42.)



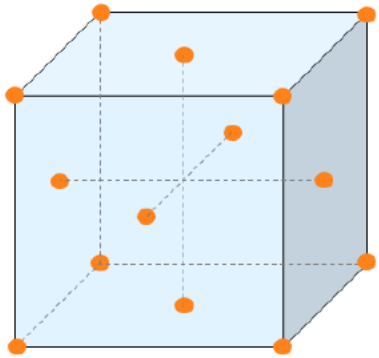


B. Crystal Structure and Orientation

12. A "bcc" crystal is a cubic crystal in which atoms appear at the corners of a cubic unit cell and one atom appears in the center of the cube. A bcc crystal is depicted below. (Ex. 14, Ross 5/2/18 Rpt. ¶ 48; Ex. 16, Fullerton 7/16/18 Rpt. ¶¶ 27-28; Ex. 17, Stach 7/16/18 Rpt. ¶ 33; Ex. 18, Clark 5/2/18 Rpt. ¶ 22; Ex. 8, Clark 8/16/18 Dep. at 39.)



13. An "fcc" crystal is a cubic crystal in which the atoms appear at the corners of a cubic unit cell and on each face of the cube. An fcc crystal is depicted below. (Ex.14, Ross 5/2/18 Rpt. ¶ 47; Ex. 16, Fullerton 7/16/18 Rpt. ¶¶ 29-30; Ex. 17, Stach 7/16/18 Rpt. ¶ 33; Ex. 18, Clark 5/2/18 Rpt. ¶ 21; Ex. 8, Clark 8/16/18 Dep. at 39.)



14. For a given crystal, the orientation of crystal planes and crystal directions can be described using a coordinate system called the "Miller Index." (Ex. 14, Ross 5/2/18 Rpt. ¶ 50; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 36; Ex. 17, Stach 7/16/18 Rpt. ¶ 35; Ex. 18, Clark 5/2/18 Rpt. ¶ 25; Ex. 20, Coffey 5/2/18 Rpt. ¶ 34.)

15. The Miller Index uses x, y, z coordinates to denote directions and planes within a cubic crystal. (Ex. 14, Ross 5/2/18 Rpt. ¶ 50; Ex. 16, Fullerton 7/16/18 Rpt. ¶¶ 337-341; Ex. 18, Clark 5/2/18 Rpt. ¶ 26; Ex. 20, Coffey 5/2/18 Rpt. ¶ 34.)

16. One of the crystals discussed in the '988 Patent is a bcc(110) crystal. (*E.g.*, Ex. 1, '988 Patent at 12:66-13:2.)

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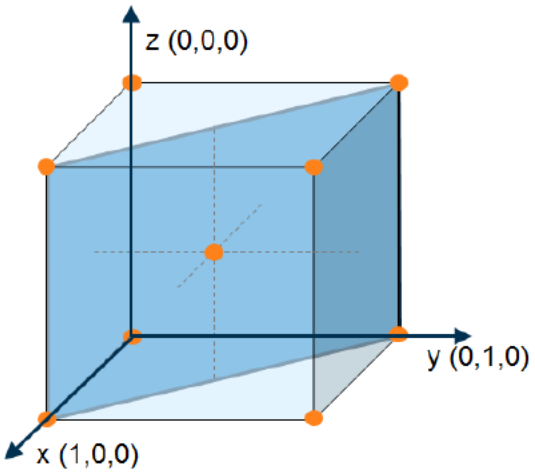
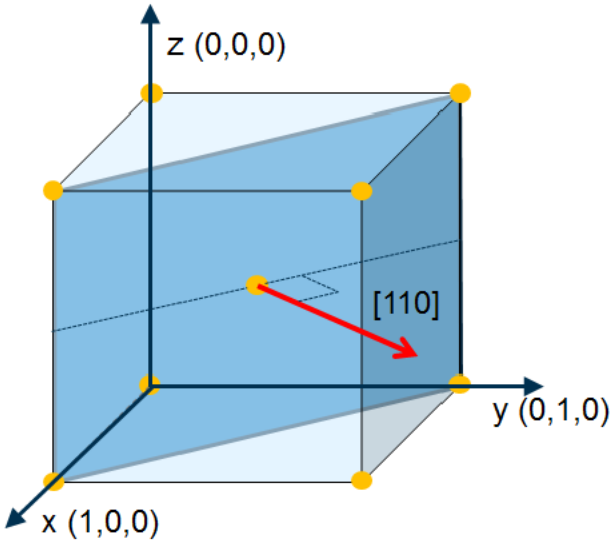
19. The (110) plane of a bcc crystal is shown below in blue. (Ex. 14, Ross 5/2/18 Rpt. ¶¶ 50-51; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 43.)



20. The 110 direction of a bcc crystal is shown below with the red arrow. (*See* Ex. 16, Fullerton 7/16/18 Rpt. ¶¶ 45-47; Ex. 18, Clark 5/2/18 Rpt. ¶ 30.)



21. One of the crystals discussed in the '988 Patent is an fcc(111) crystal. (*E.g.*, Ex. 1, '988 Patent at 14:55-61.)

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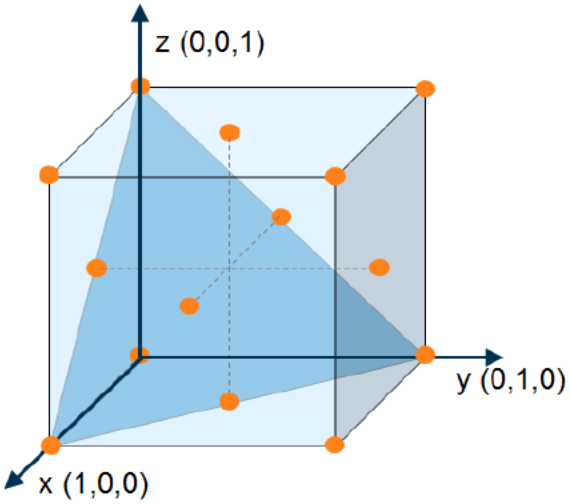
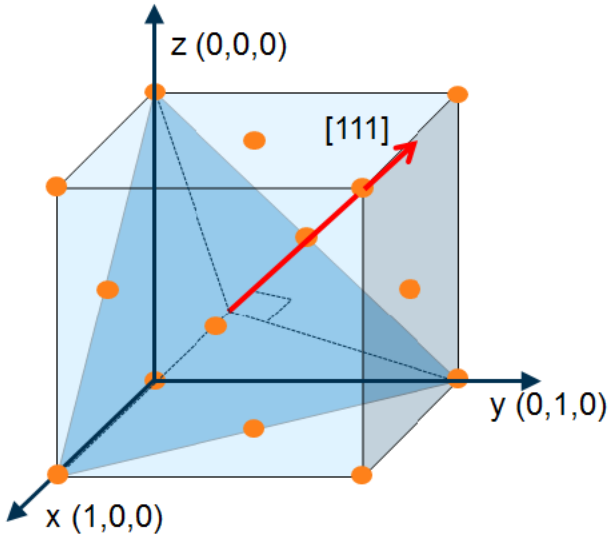
24. The (111) plane of an fcc crystal is the plane shown below in blue. (Ex. 14, Ross 5/2/18 Rpt. ¶ 52; Ex. 16, Fullerton 7/16/18 Rpt. ¶ 39; Ex. 18, Clark 5/2/18 Rpt. ¶ 28.)



25. The (111) direction of an fcc crystal is shown below with the red arrow. (*See* Ex. 16, Fullerton 7/16/18 Rpt. ¶¶ 45-47; Ex. 18, Clark 5/2/18 Rpt. ¶ 30.)



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[Paragraphs 27 through 39 intentionally omitted]

C. Measuring Crystal Properties

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42. X-ray diffraction is discussed in the '988 Patent. (*E.g.*, Ex. 1, '988 Patent at 14:18-23, 38:17-30, FIG. 14.)

43. The '988 Patent discusses using x-ray diffraction to measure the texture of a layer. (*E.g.*, Ex. 1, '988 Patent at 38:17-30.)

44. The '988 Patent discusses using x-ray diffraction to take pole figure measurements. (*E.g.*, Ex. 1, '988 Patent at 14:18-23, FIG. 14.)

45. FIG. 14 of the '988 Patent is an XRD pole figure measurement. (Ex. 1, '988 Patent at 14:18-23.)

46. Transmission electron microscopy ("TEM") is a testing method that can be used to study the structure of crystalline materials. (Ex. 16, Fullerton 7/16/18 Rpt. ¶ 72.)

47. TEM measurements are not mentioned or discussed in the '988 Patent. (*See* Ex. 1, '988 Patent.)

48. The '988 Patent does not discuss using TEM to measure the texture of a layer. (*See* Ex. 1, '988 Patent.)

49. Fast Fourier Transforms ("FFTs") are not mentioned or discussed in the '988 Patent. (*See* Ex. 1, '988 Patent.)

50. The '988 Patent does not discuss using FFTs to measure the texture of a layer. (*See* Ex. 1, '988 Patent.)

II. Asserted Claims and Accused Products

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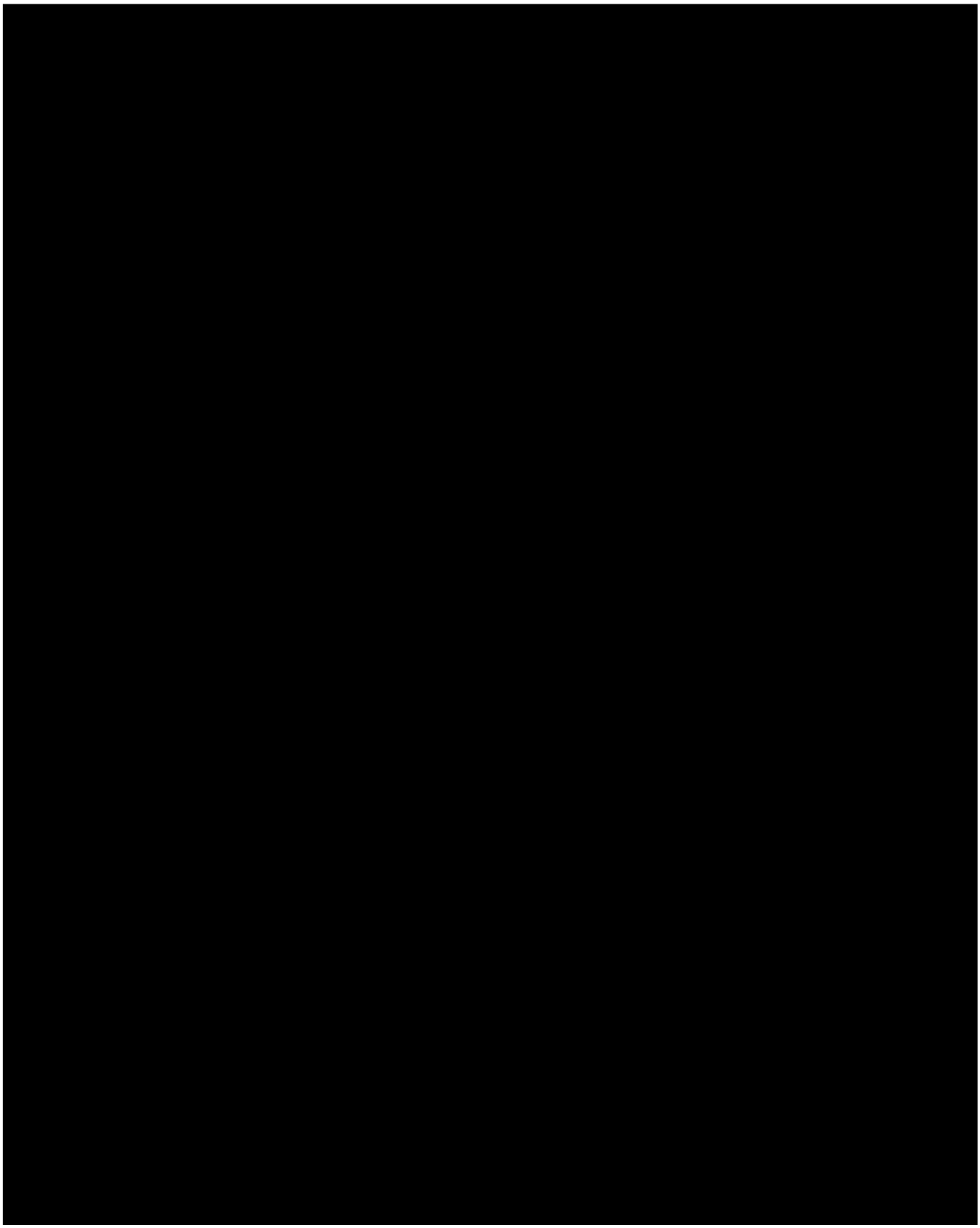
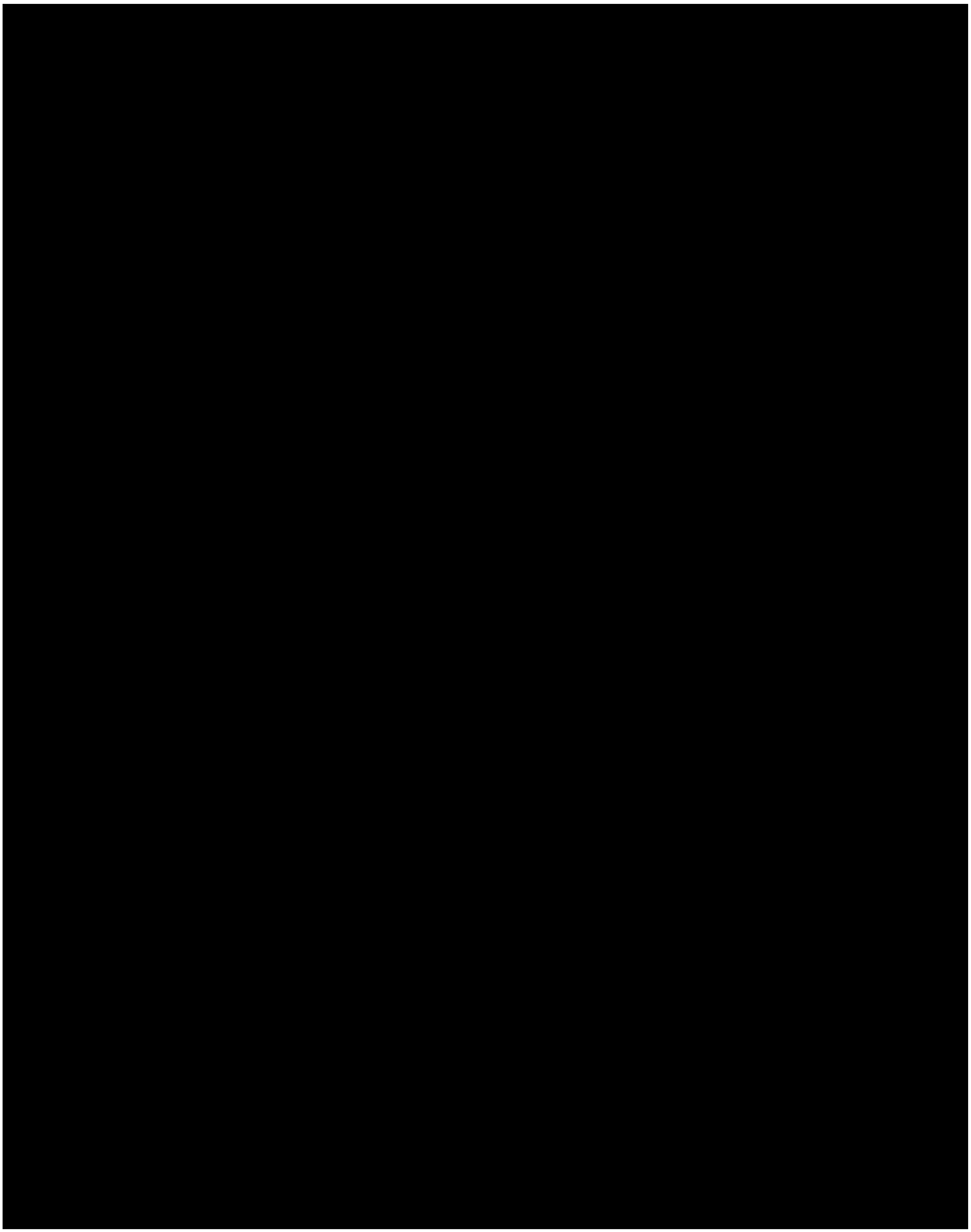
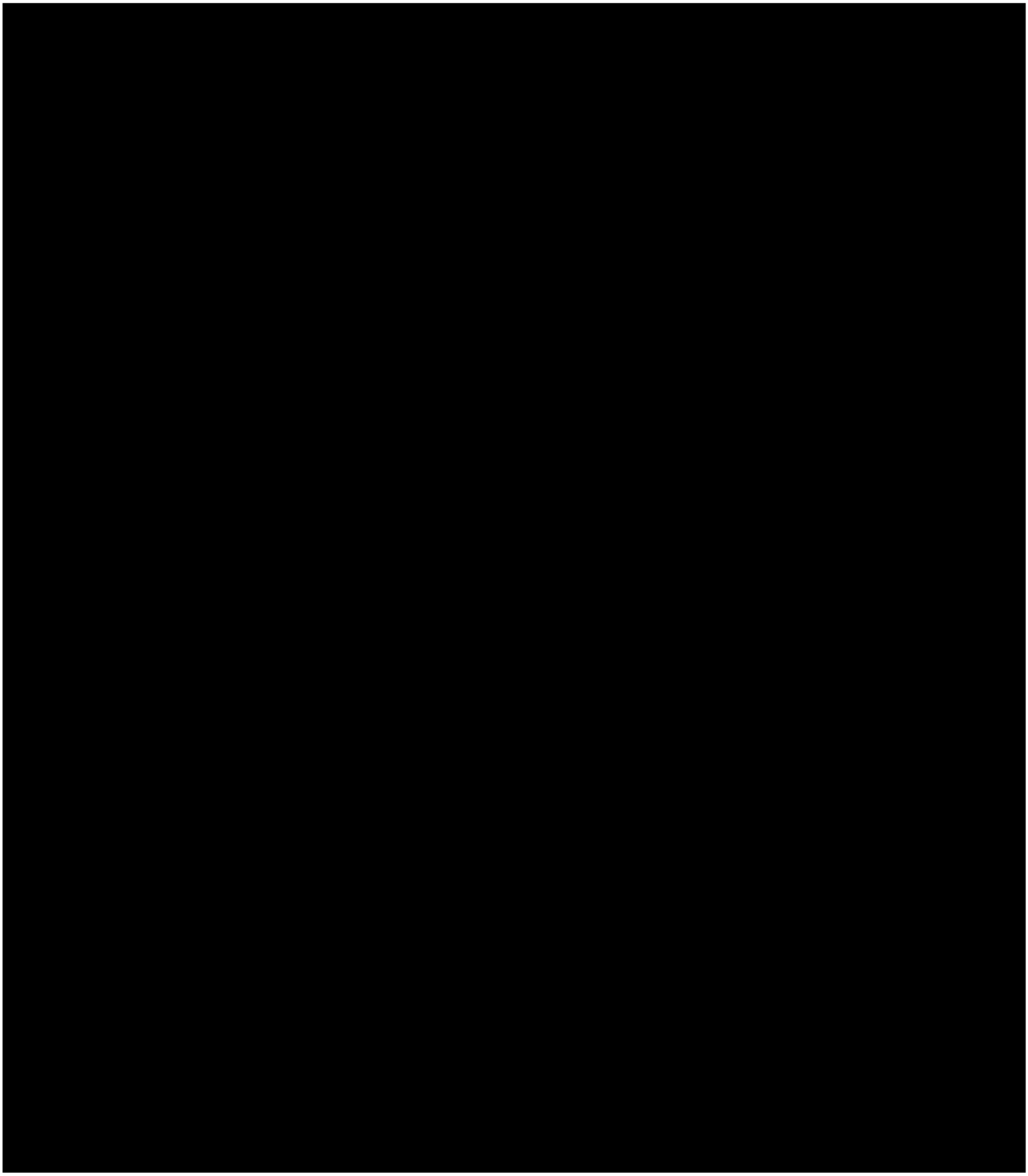


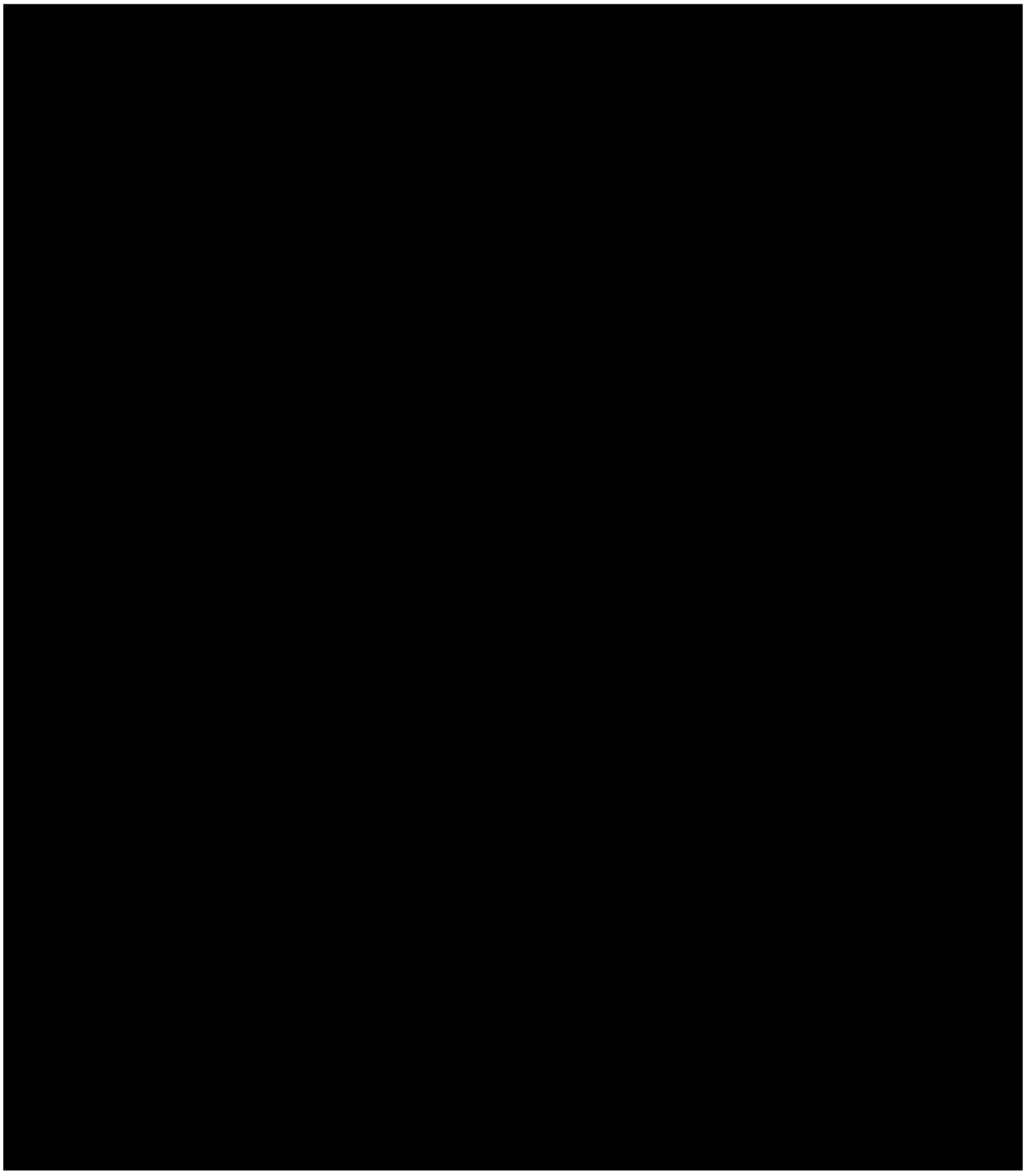


III. Facts Relating to Invalidity

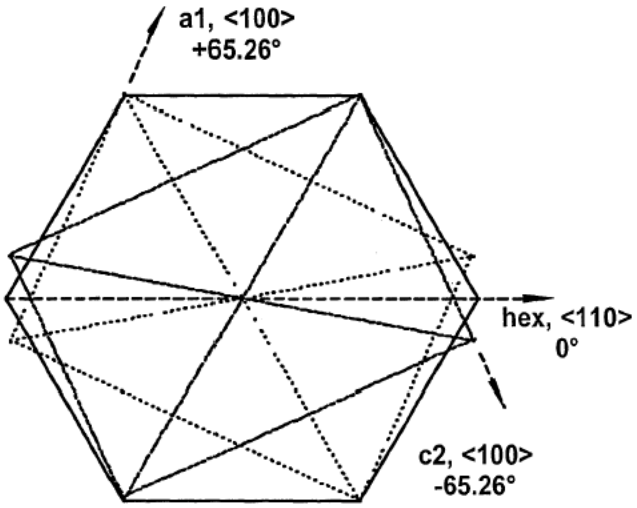
66. Each Asserted Claim of the '988 Patent requires a layer that provides a "(111) textured hexagonal atomic template." (Ex. 1, '988 Patent.)



A. The '988 Patent Specification



79. FIG. 5 of the '988 Patent, which is shown below, depicts the variants a1 and c2 grown on a single crystal hexagonal template:



(Ex. 1, '988 Patent at FIG. 5, 13:39-42; Ex. 14, Ross 5/2/18 Rpt. ¶¶ 193-194, 371.)

80. The '988 Patent states: "FIG. 5 shows an illustration of two of the six possible orientational variants of the (110) crystal plane of a bcc-d crystal in comparison to the atomic arrangement of the (111) crystal plane of a hexagonal lattice template crystal." (Ex. 1, '988 Patent at 13:39-42.)

81. There are two thin-film examples in the '988 Patent that are mentioned as having polycrystalline templates: LSSDK-0505-1 and LSSDK-0505-2. (Ex. 1, '988 Patent at 44:28-60; Ex. 14, Ross 5/2/18 Rpt. ¶ 215.)

82. In discussing LSSDK-0505-1 and LSSDK-0505-2, the '988 Patent states that: "Because of the polycrystalline hexagonal template layer and the mixed amorphous and ceramic substrate has a very large interfering set of diffraction peaks no X-ray data was taken." (Ex. 1, '988 Patent at 44:57-60.)

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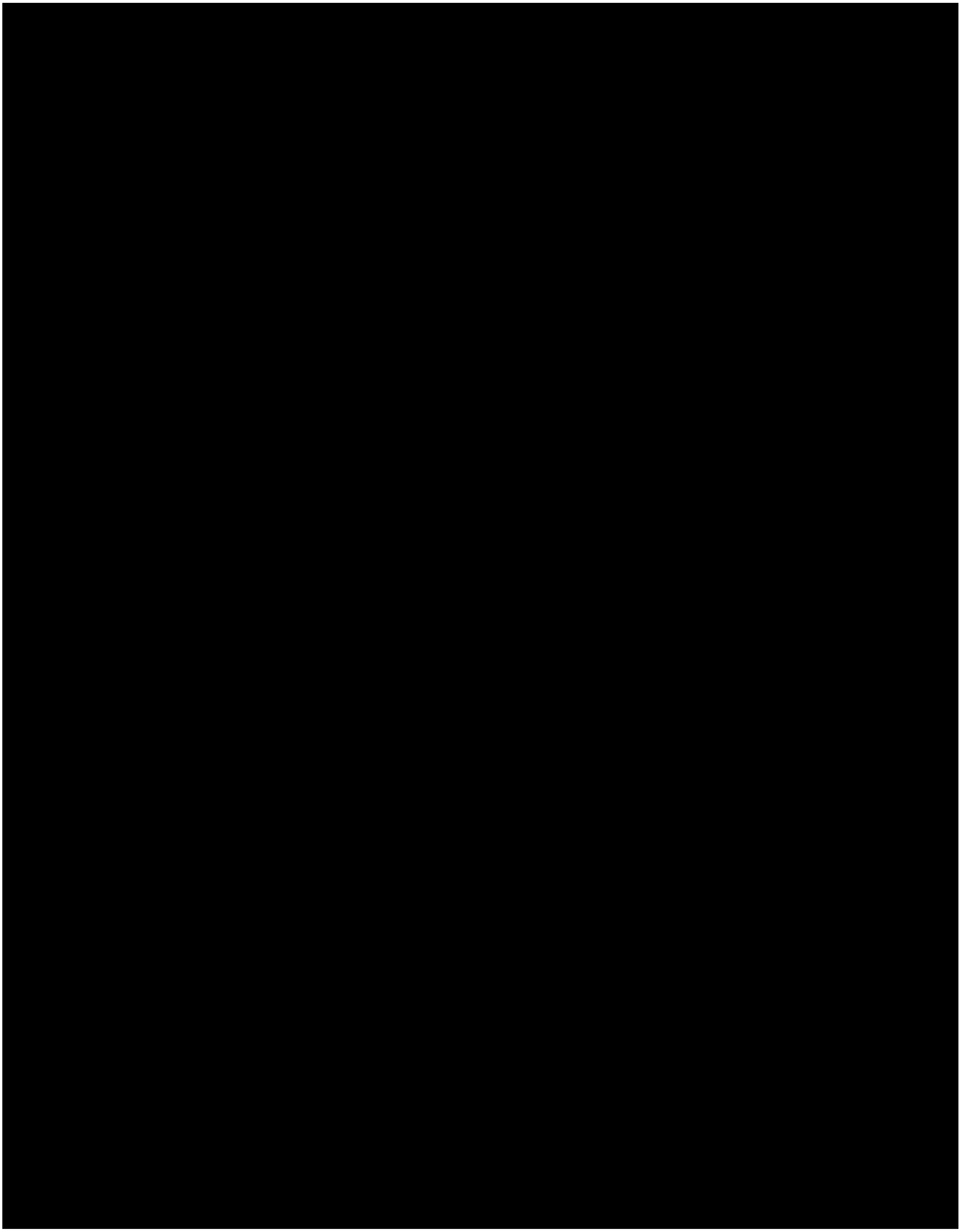
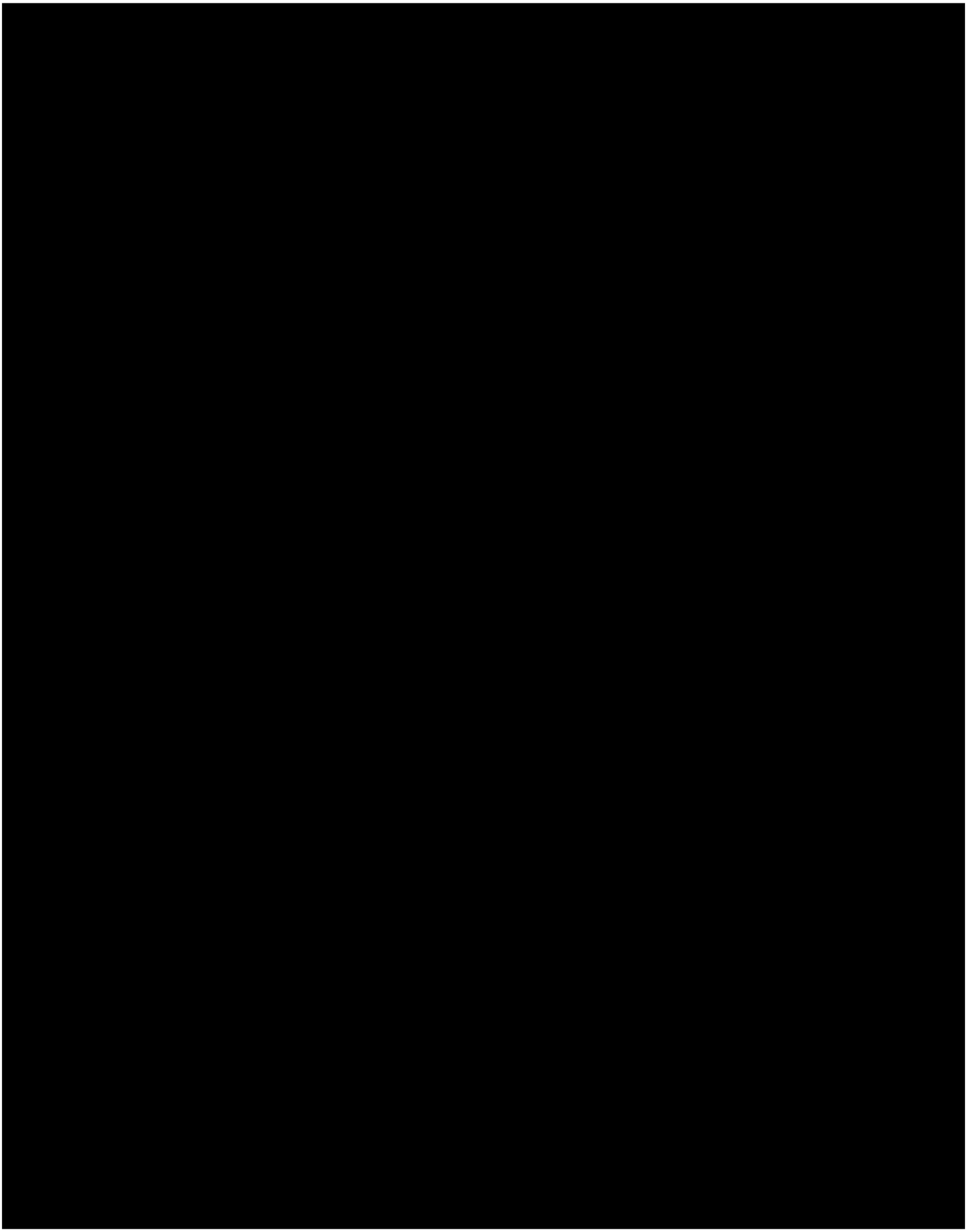


93. The '988 Patent states:

> [E]ven though a single crystal substrate will yield the best and most easily understood performance, having a single crystal is not a requirement to achieve the near linear and low loss magnetic response function. *The requirement is only that each group of coupled variants be selected and placed upon an appropriately rotated polycrystalline grain template so as to produce a nearly common hard magnetic axis for the entire sample.* When a non-single crystalline substrate is used for the deposition of a highly (111) textured polycrystalline hexagonal atomic template the films will consist of individual grains with random in-plane orientation. *The technique* to obtaining the same easy and hard magnetic axis behavior across an entire polycrystalline sample *is to induce the appropriate (110) textured bcc-b coupled uniaxial variant set for each of the randomly oriented hexagonal templates*.

(Ex. 1, '988 Patent at 21:67-22:15.)



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B. Unpredictability of the Field

99. The '988 Patent states that "[m]aterials and device processing to achieve a desired orientation or anisotropy is commonly difficult and sometimes impossible," and that "the mechanism for achieving anisotropic orientation has not been well understood." (Ex. 1, '988 Patent at 1:62-66.)

100. The '988 Patent states that "the degree of understanding of the cause of uniaxial anisotropy in cubic materials is poor." (Ex. 1, '988 Patent at 5:63-64.)

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104. The '988 Patent states that "unless the processing conditions are just right," one will not obtain the six new variants but rather the three variants of the prior art:

> Also, the energies of film formation must be just balanced against the surface bonding energies otherwise this symmetry breaking will not occur. Likewise, we have found that *unless the processing conditions are just right not only will the variants not be symmetry broken, but the variant set will be the three variants discussed by Gong and Zangari rather than the six new ones*. By adjusting these competing energies the desired film structure can be obtained. *Adjustment parameters include deposition rate, substrate temperature, vacuum quality against film oxidation, and hexagonal template atomic spacing and material composition*.

(Ex. 1, '988 Patent at 22:51-59 (emphasis added).)

[redacted]

C. Dr. Lambeth's Filing of the '988 Patent

106. Dr. Lambeth filed the provisional application for the '988 Patent on August 29, 2001. (Ex. 4, Lambeth 2/27/18 Dep. at 285-286; Ex. 1, p. 1, Certificate of Correction (60).)

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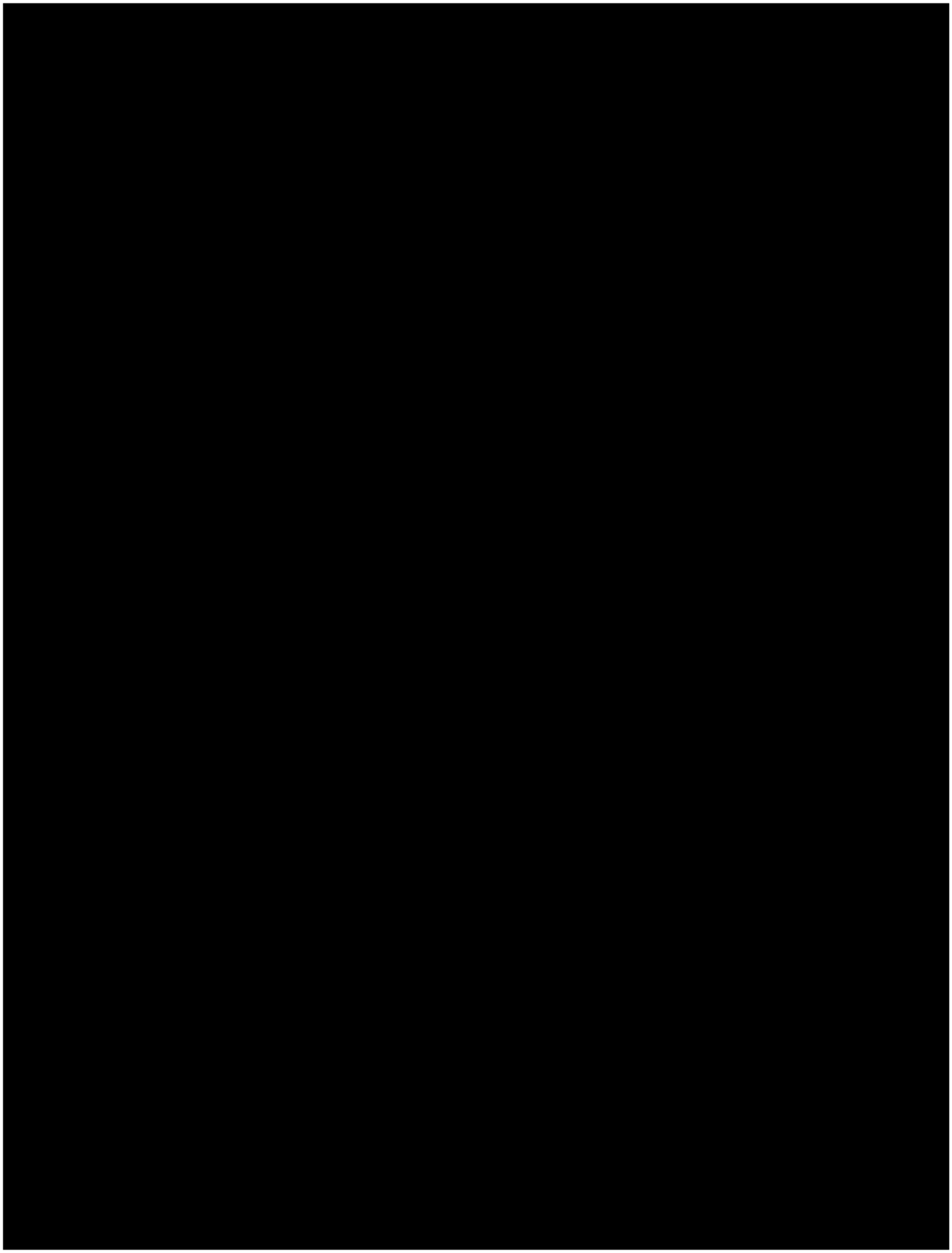

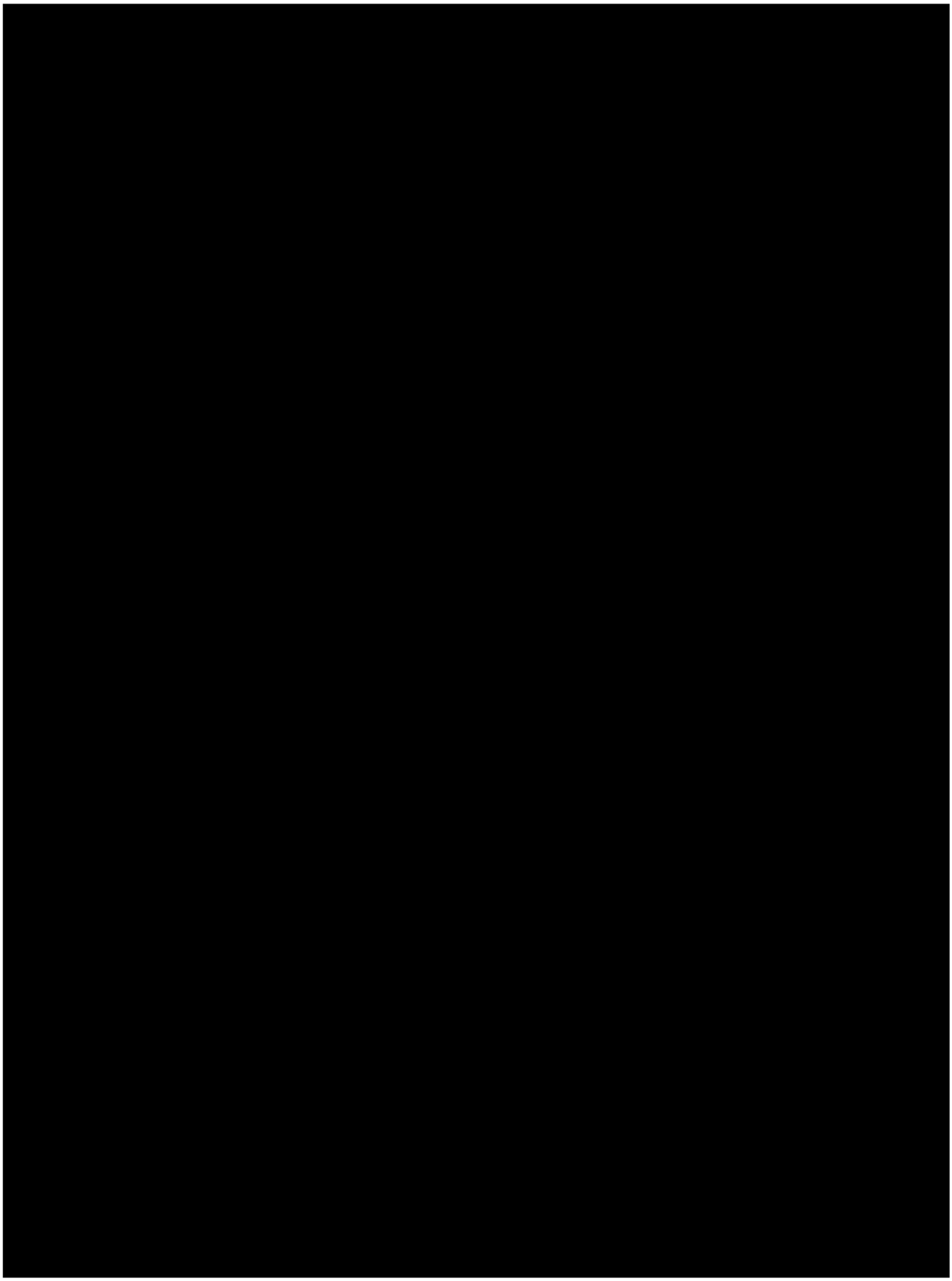

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IV. Facts Relating to Non-Infringement: Symmetry Broken Structure

116. LMS requested that the Court construe "symmetry broken structure" to mean "a structure consisting of unequal amounts of the bcc-d variants of a six variant system." (Dkt. 50, at 25.)

117. The '988 Patent states:

> By carefully controlling the epitaxial growth conditions of (110) crystalline textured bcc or bcc derivative thin film materials on highly oriented (111) hexagonal atomic templates the applicant has invented a new set of six crystalline variants with special orientational relationships. By the selection and the growth of a very special exchange coupled subset of these six orientational variants a symmetry broken uniaxial magnetic thin film is obtained.

(Ex. 1, '988 Patent at 14:48-55.)

118. Dr. Coffey stated in a declaration:

> The '988 patent further discloses growing over this template a layer (or layers) of magnetic material that has a bcc or bcc derivative ("bcc-d") crystal lattice structure. As the '988 patent explains, when such a material is grown over the atomic template, there are a limited number of ways in which that bcc-d material can be oriented, namely six.

(Dkt. 50-1, ¶ 33.)

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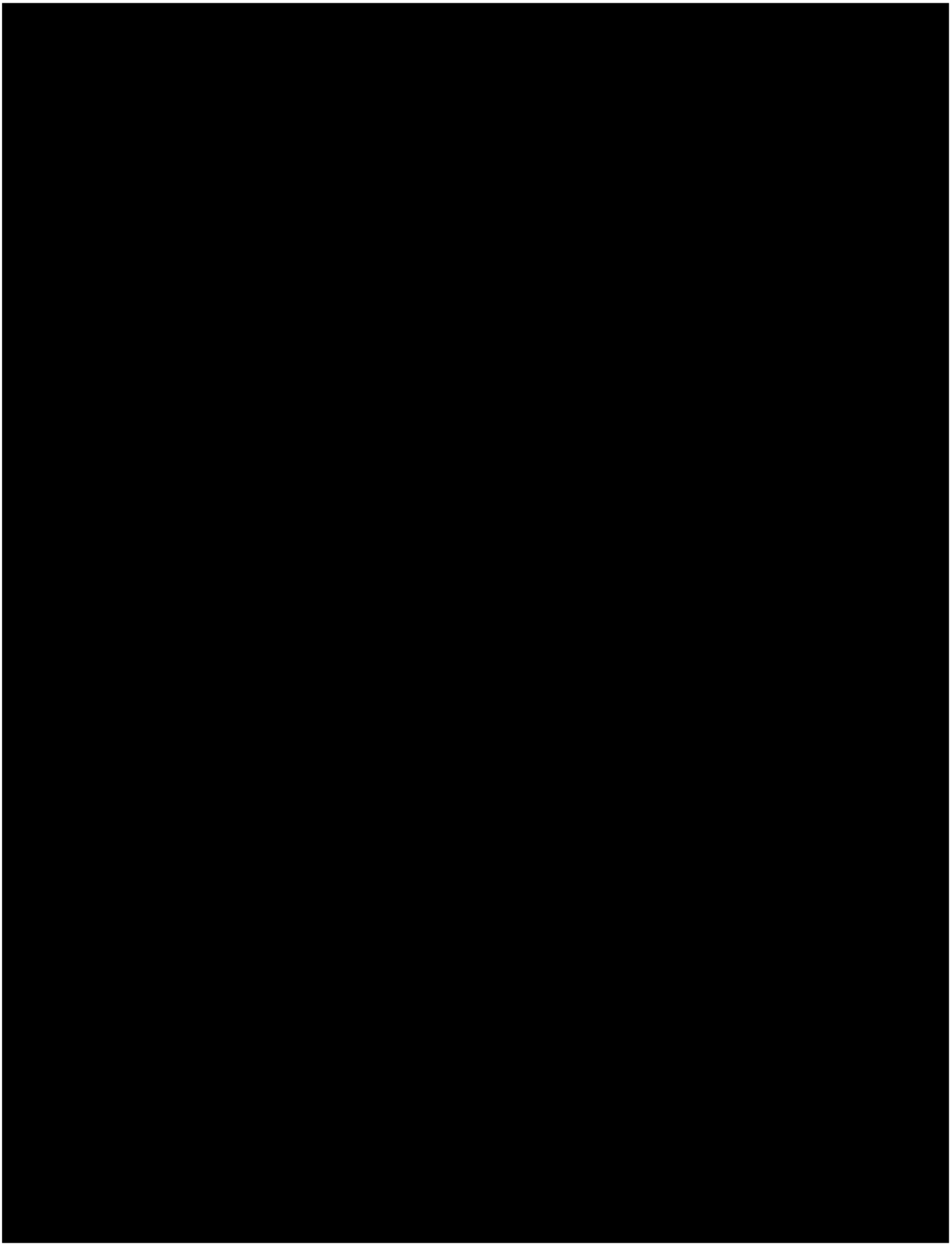
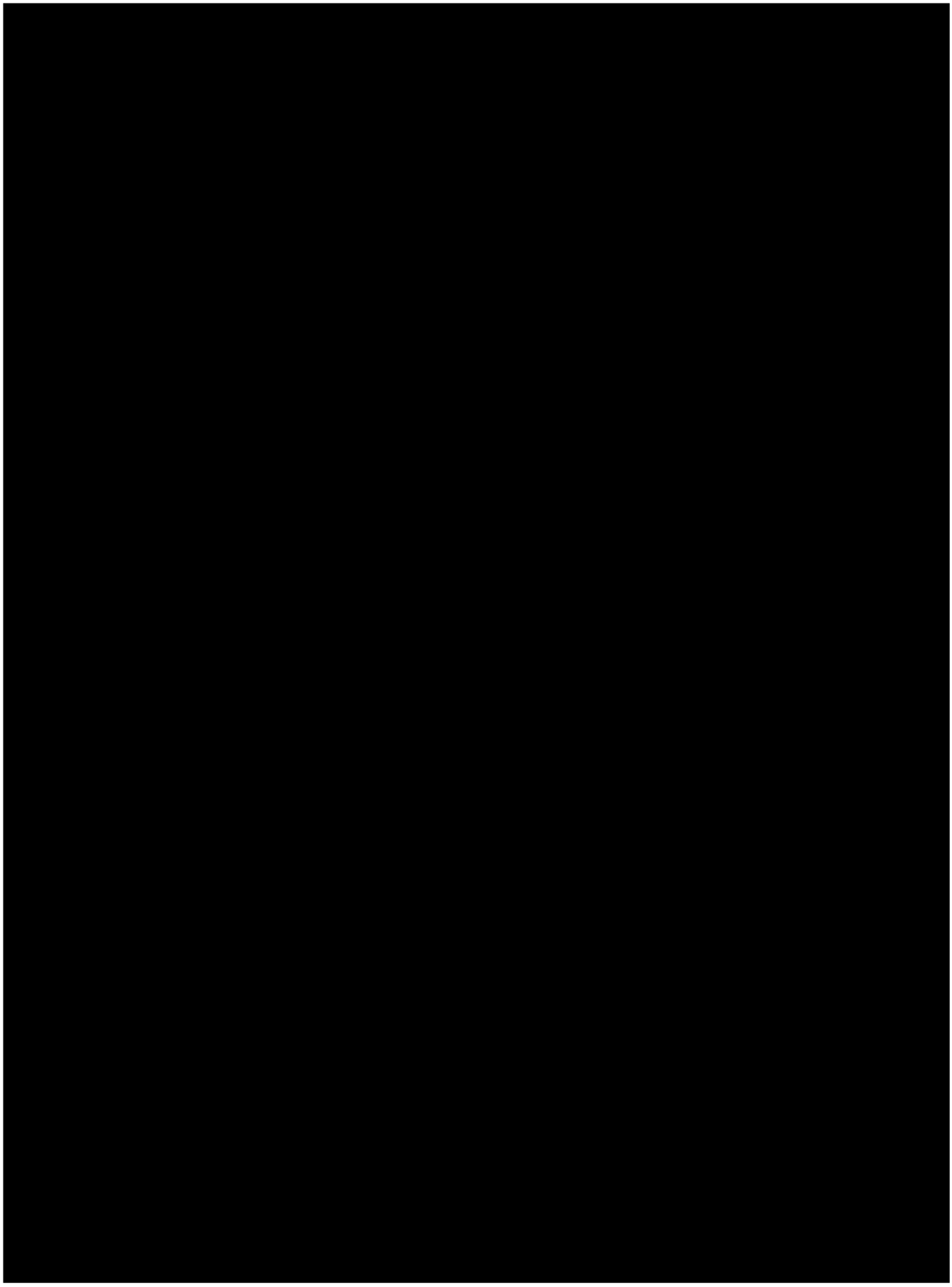
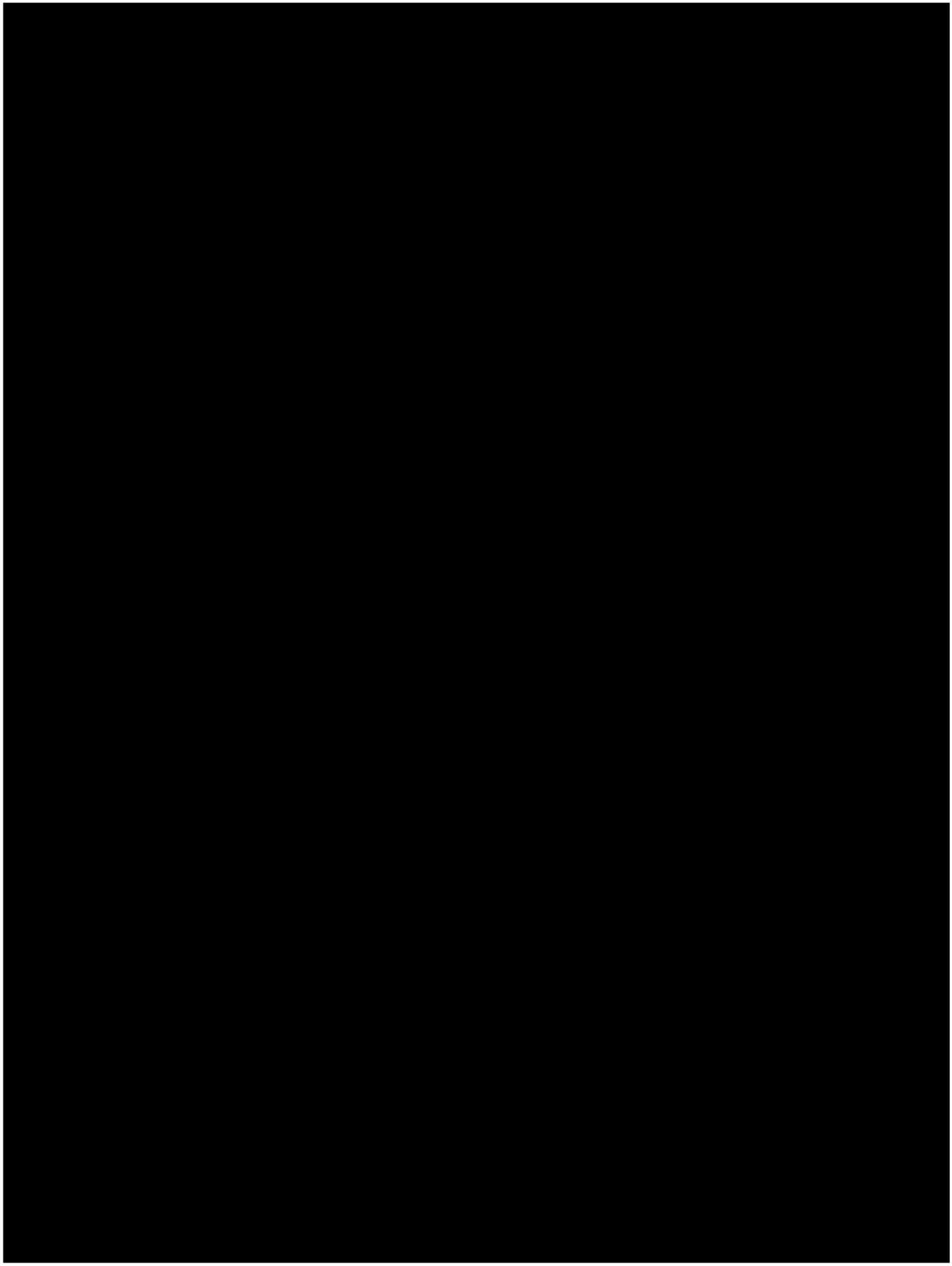
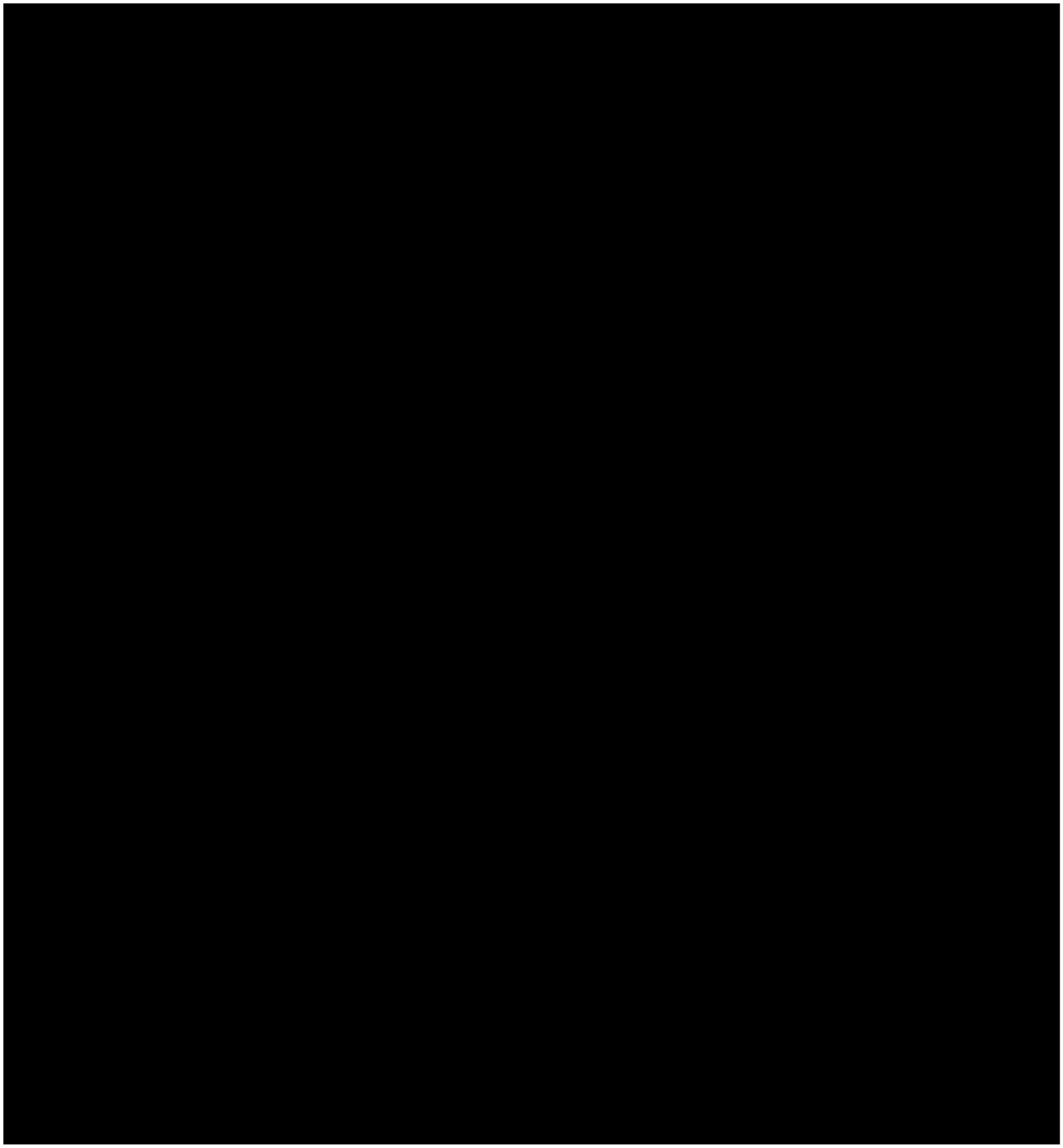
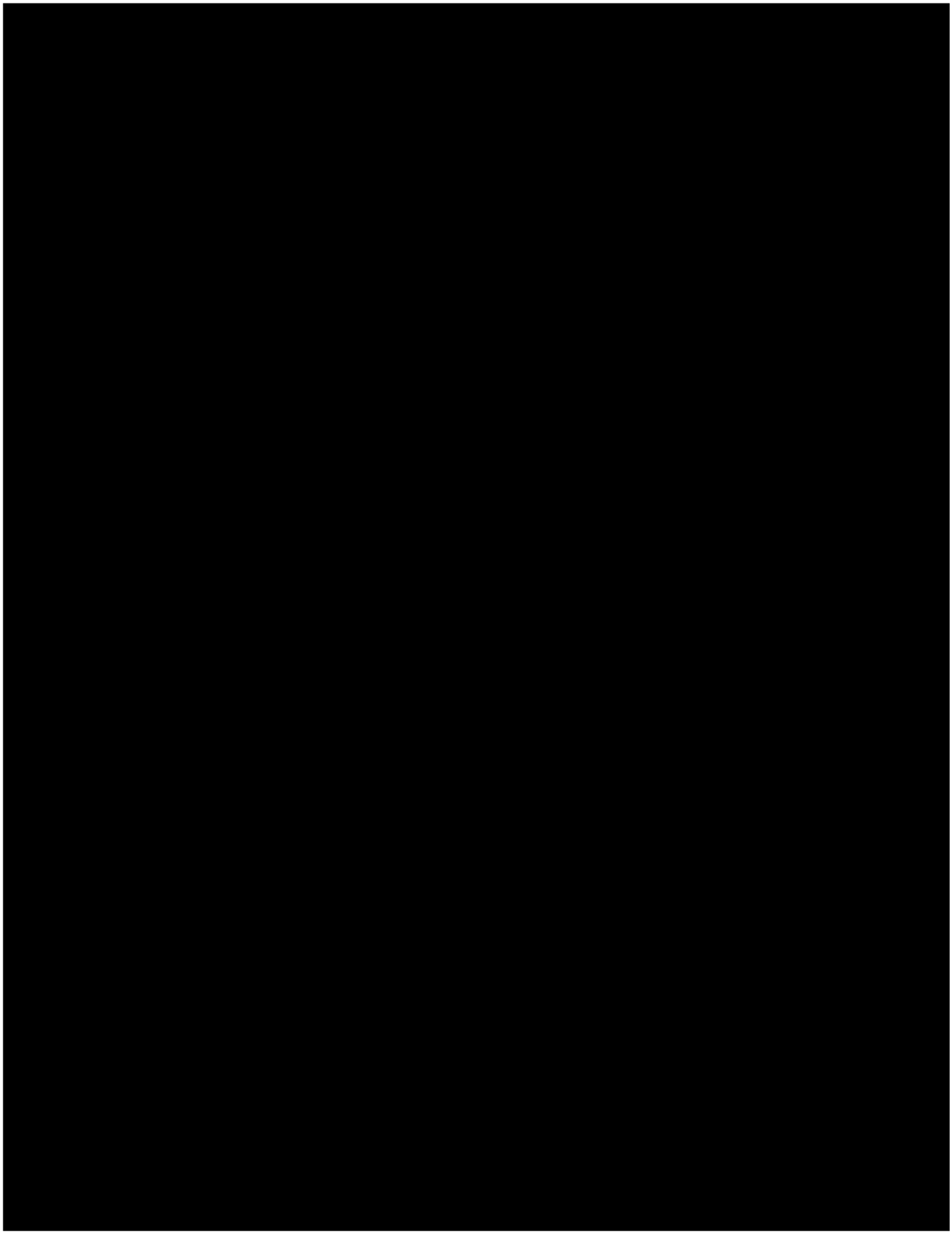
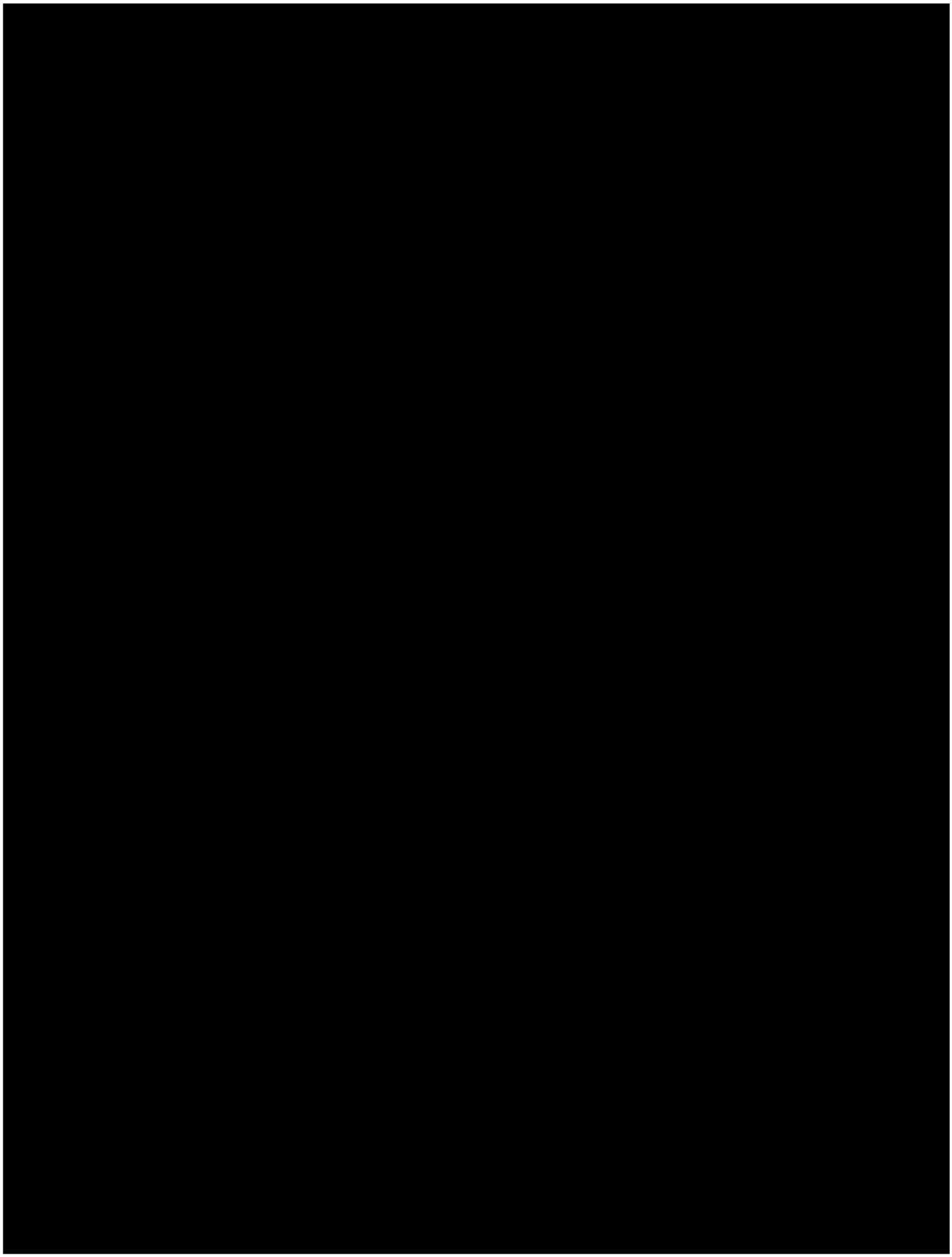


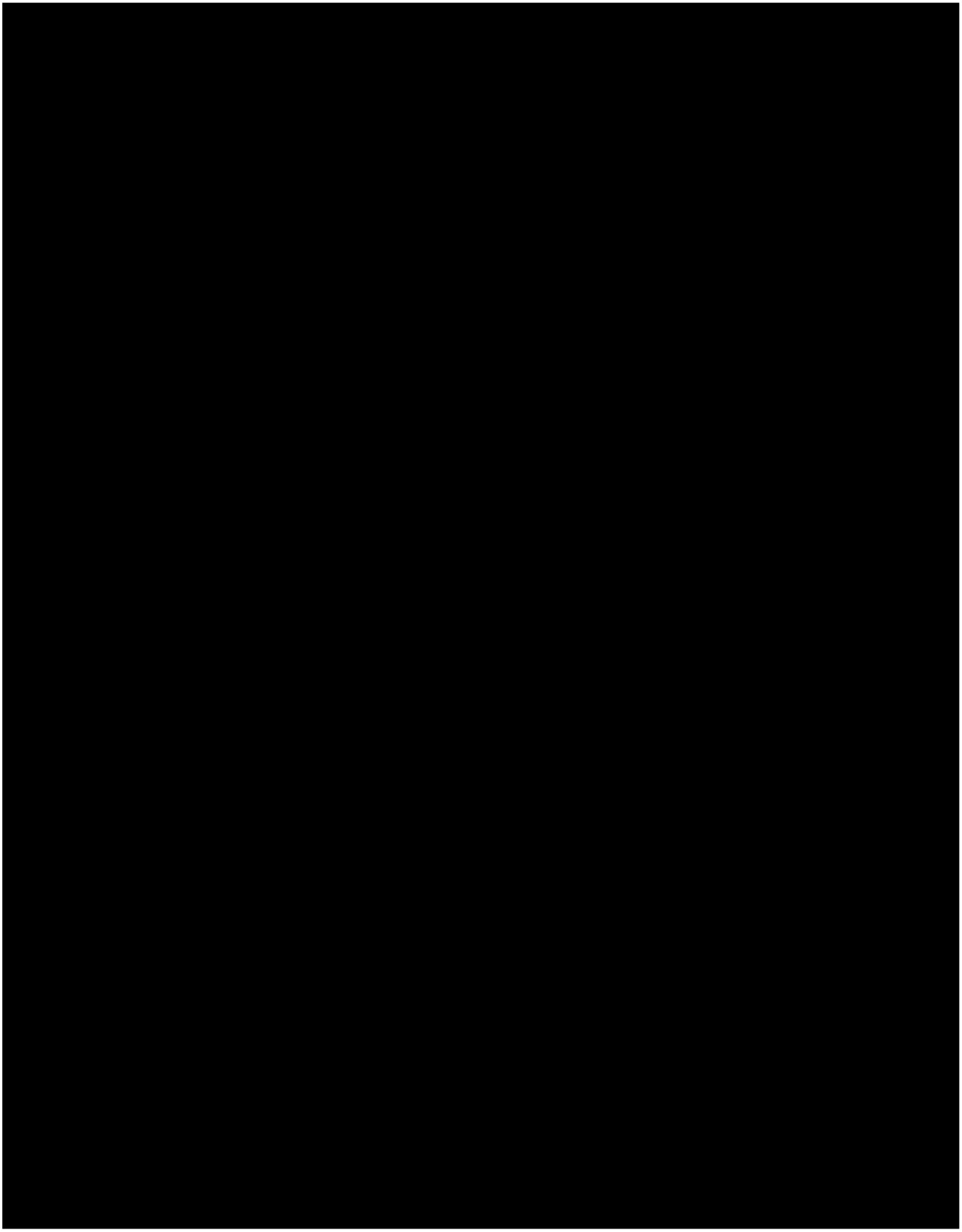


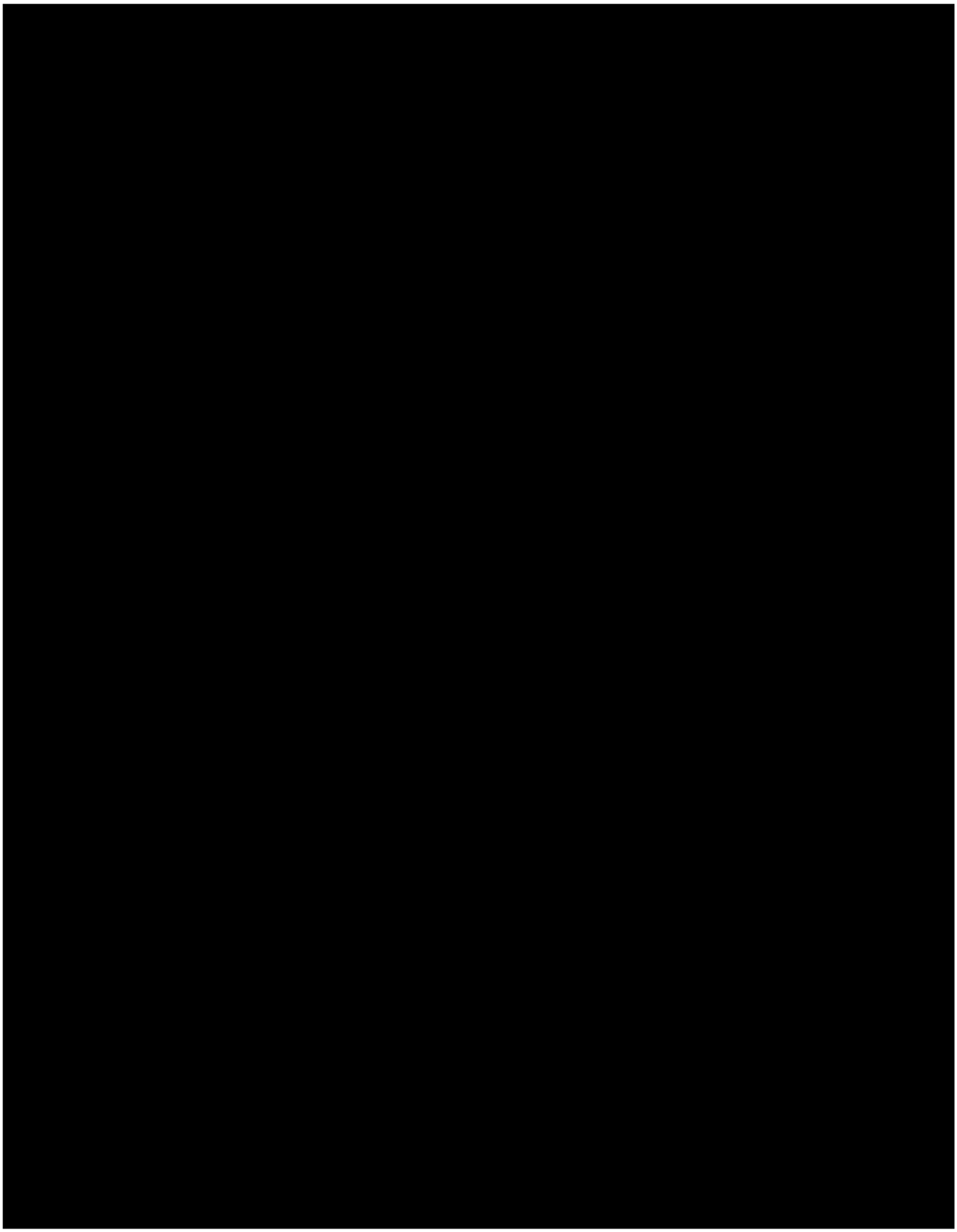


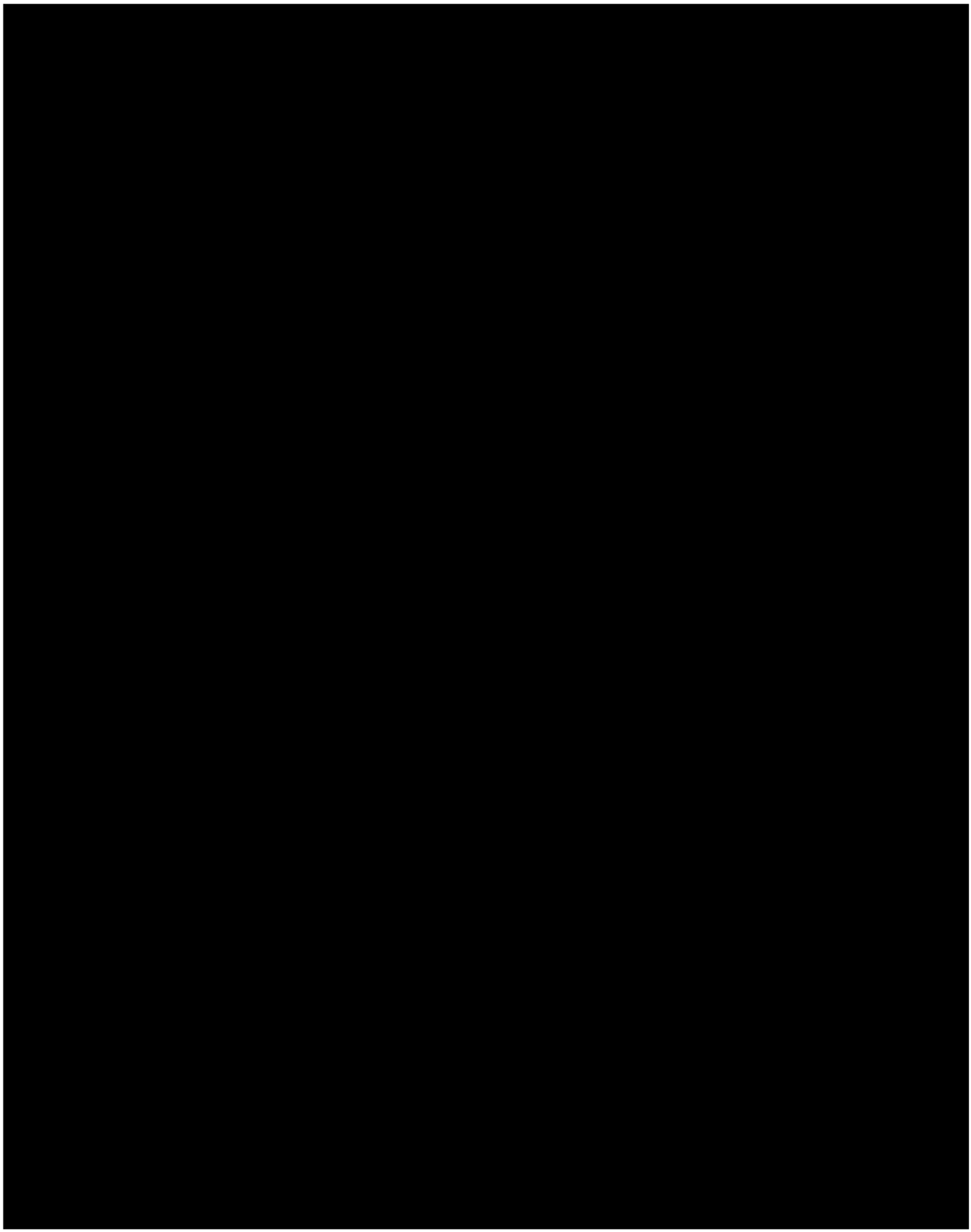


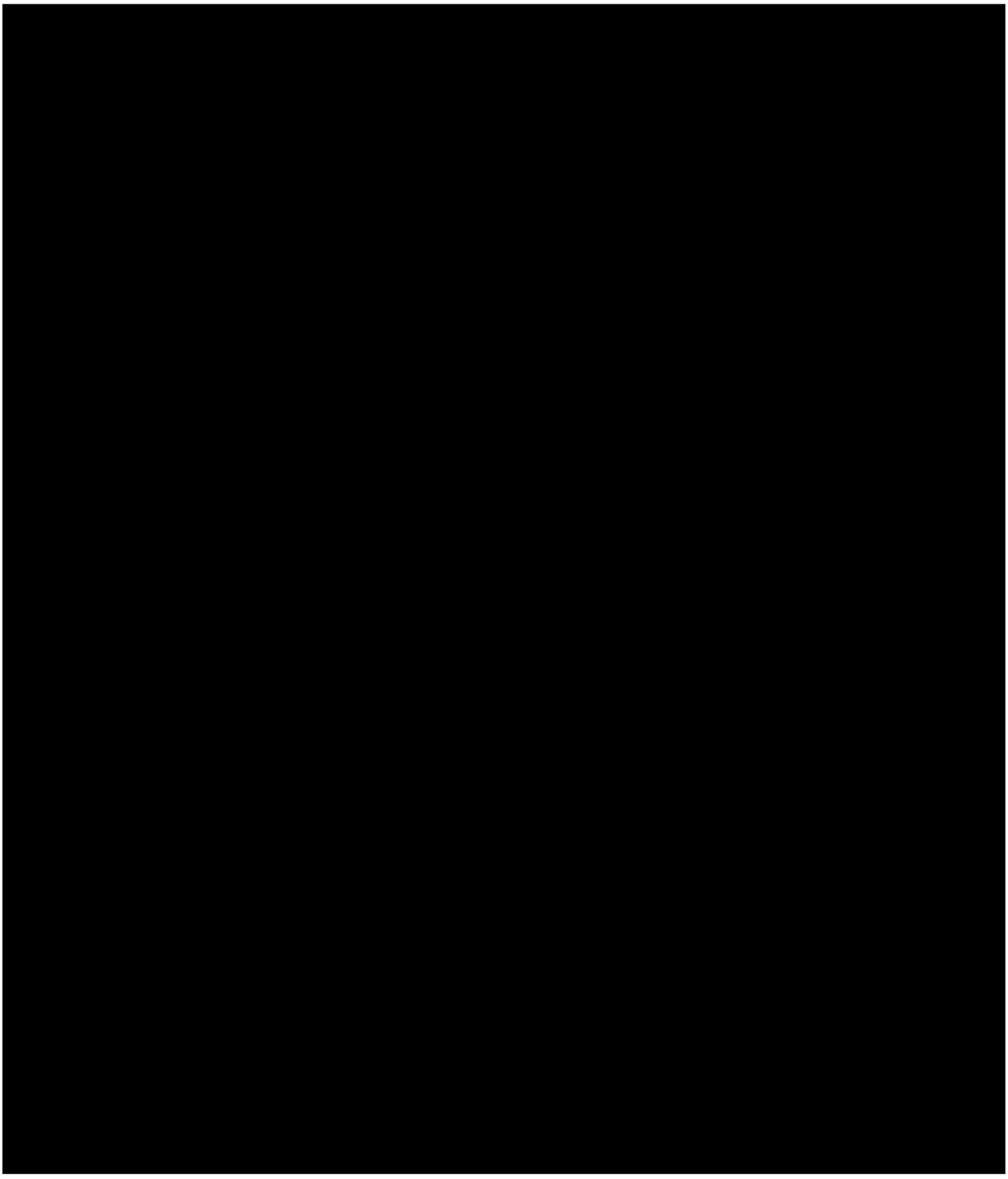


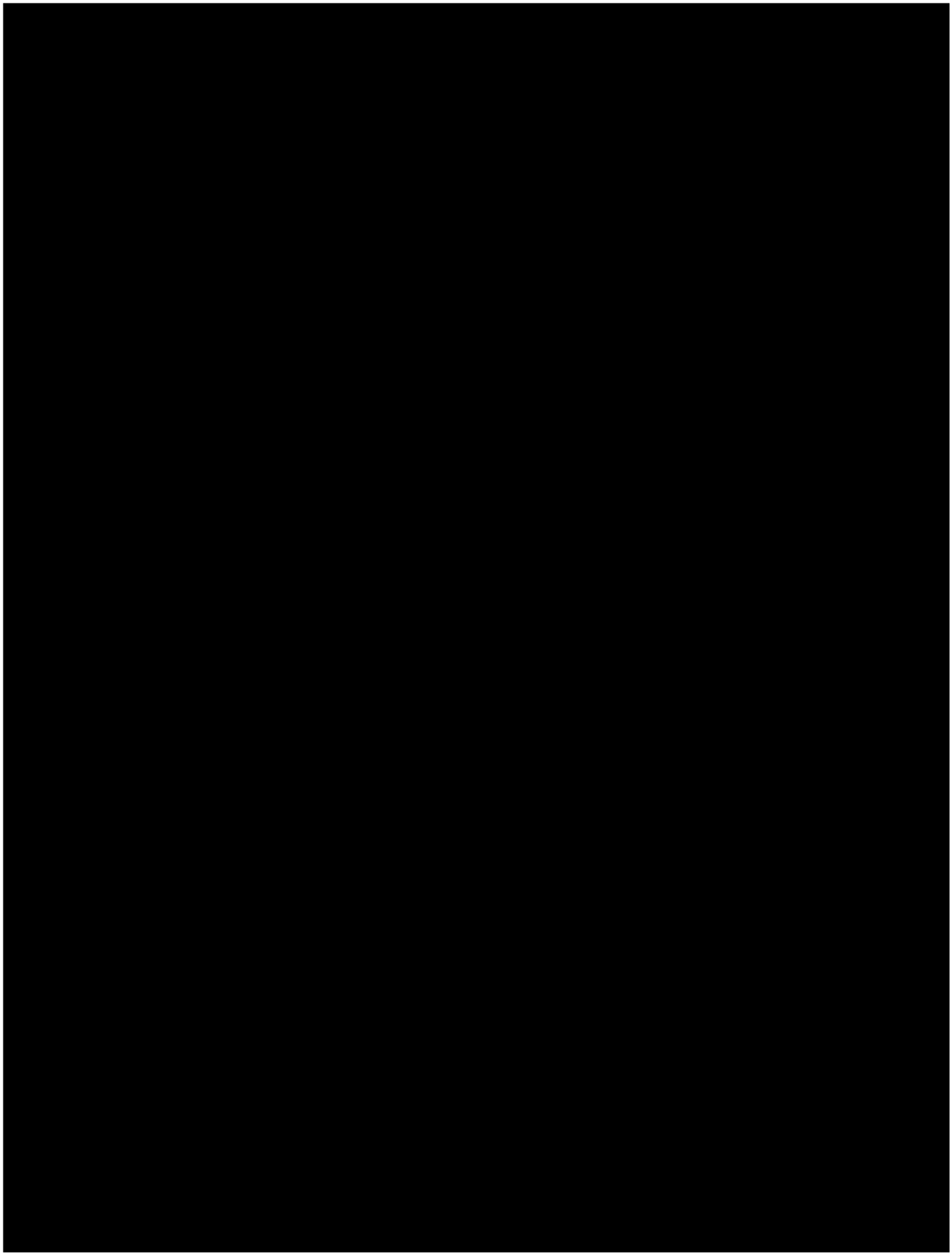


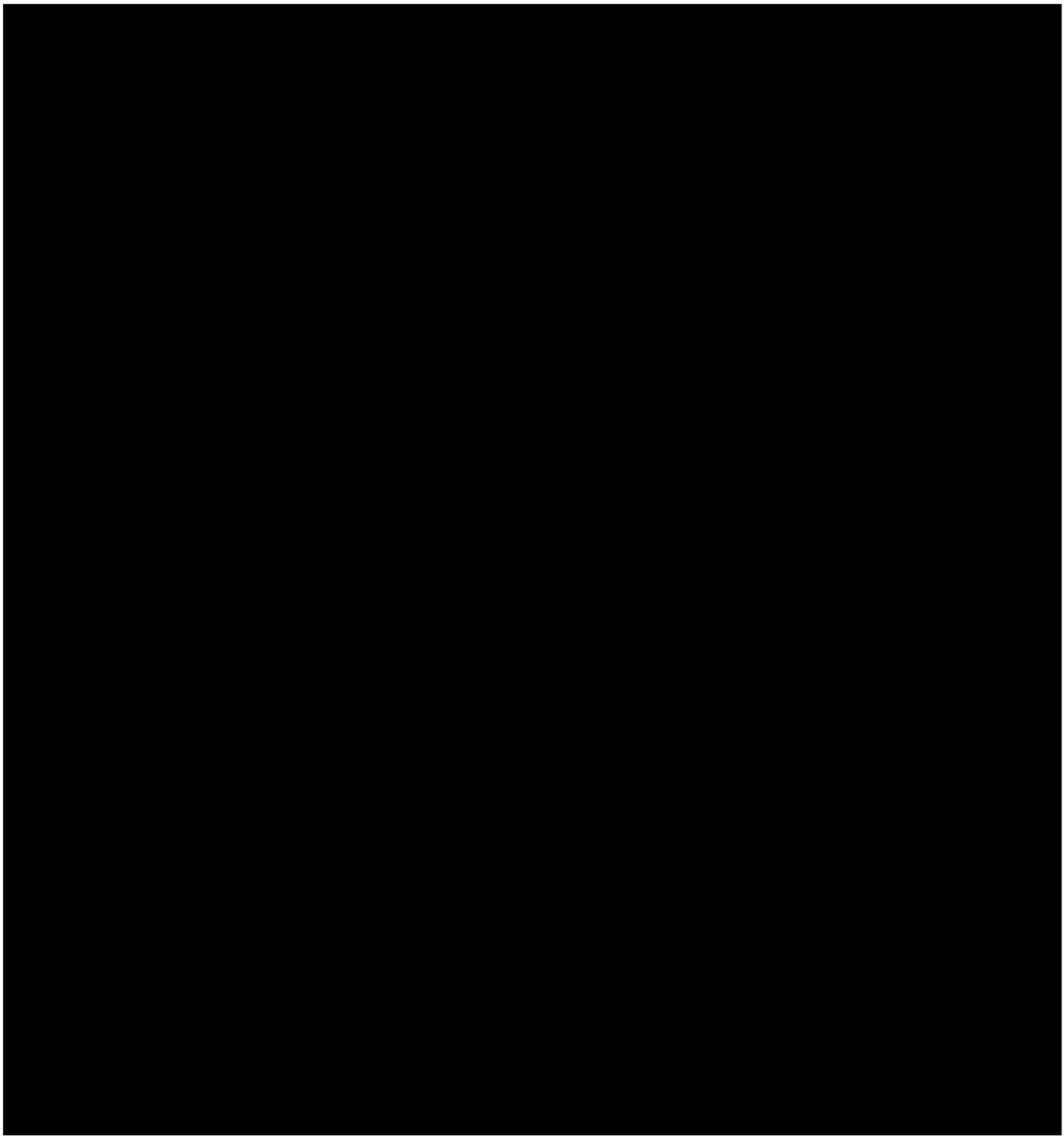




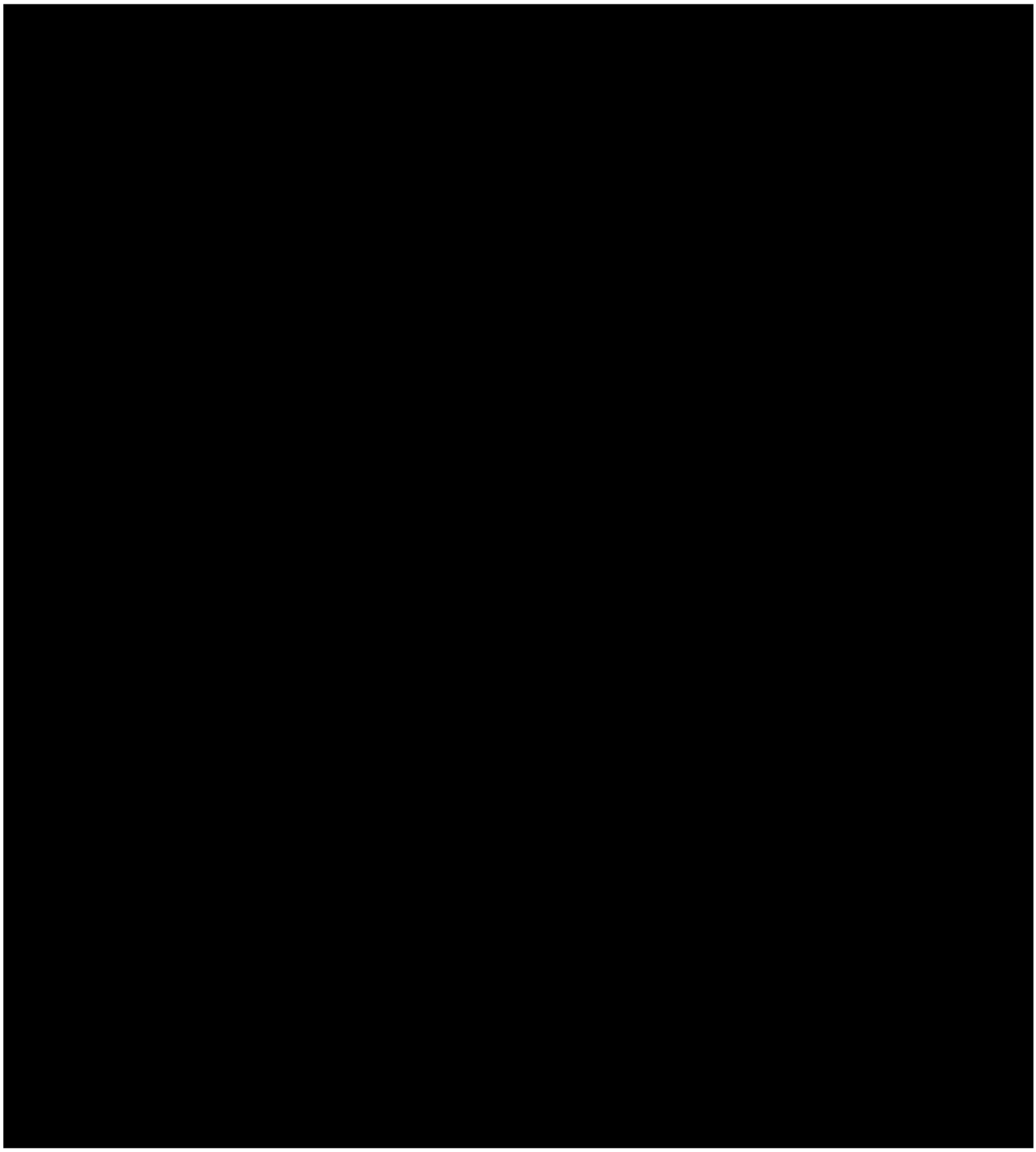


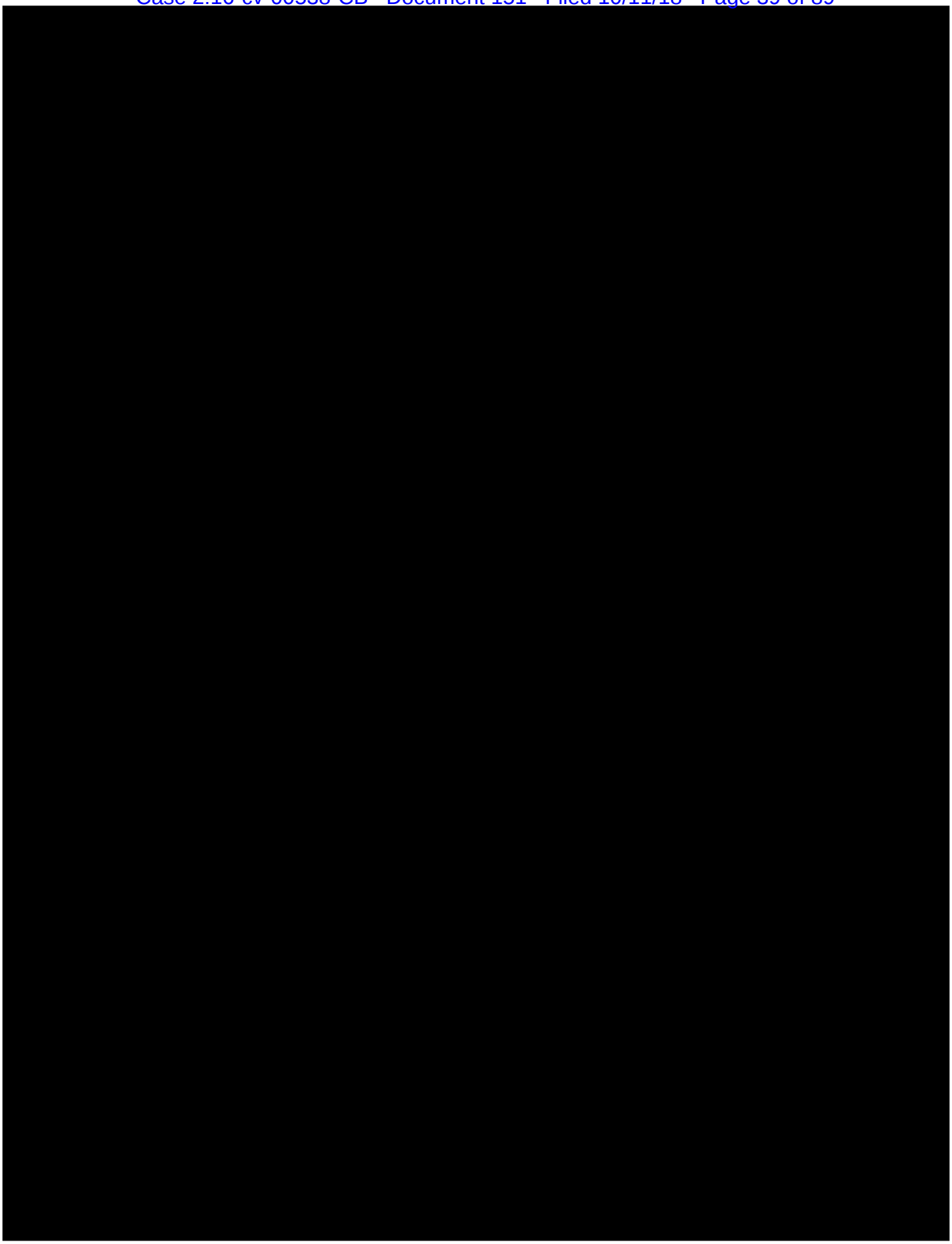


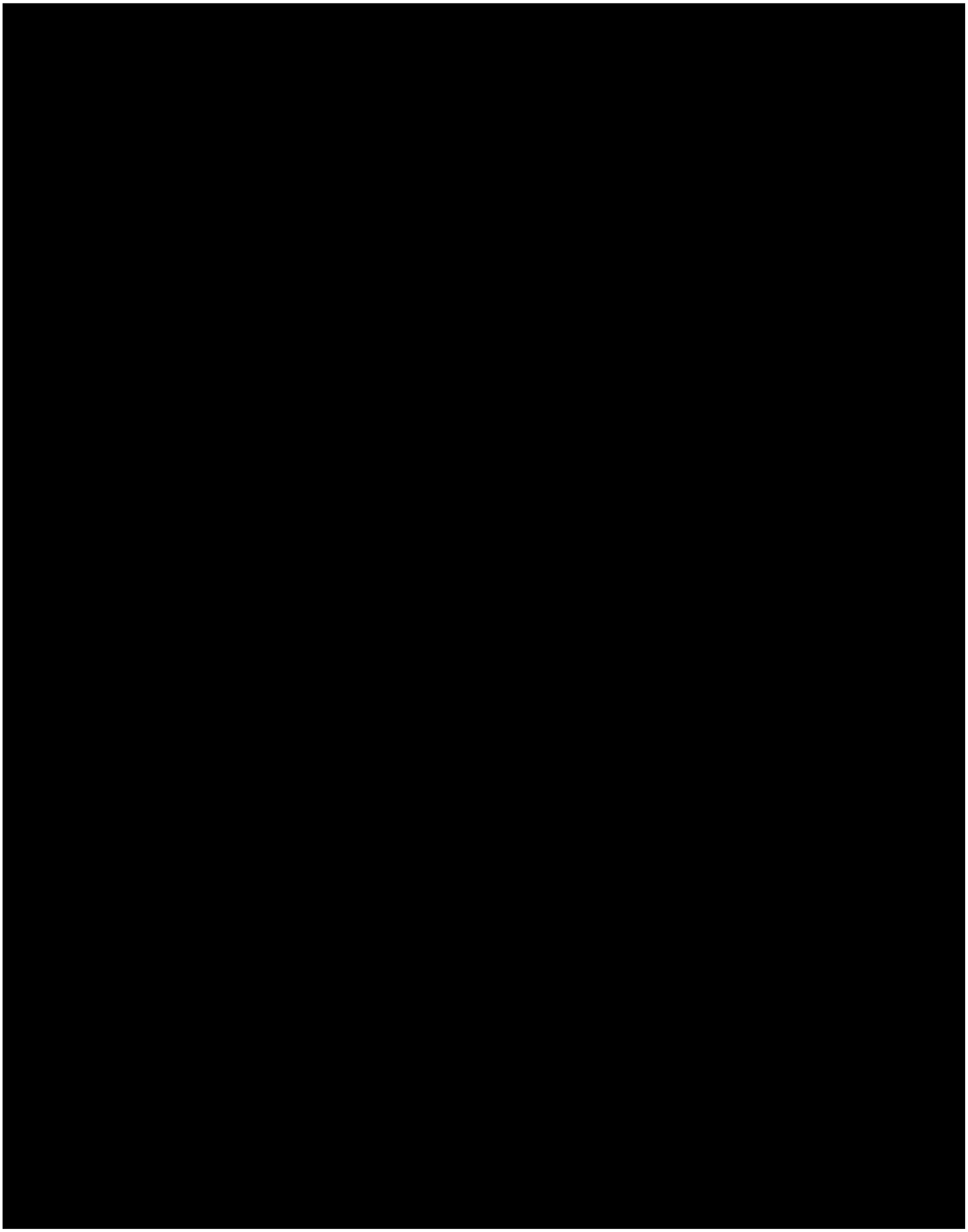


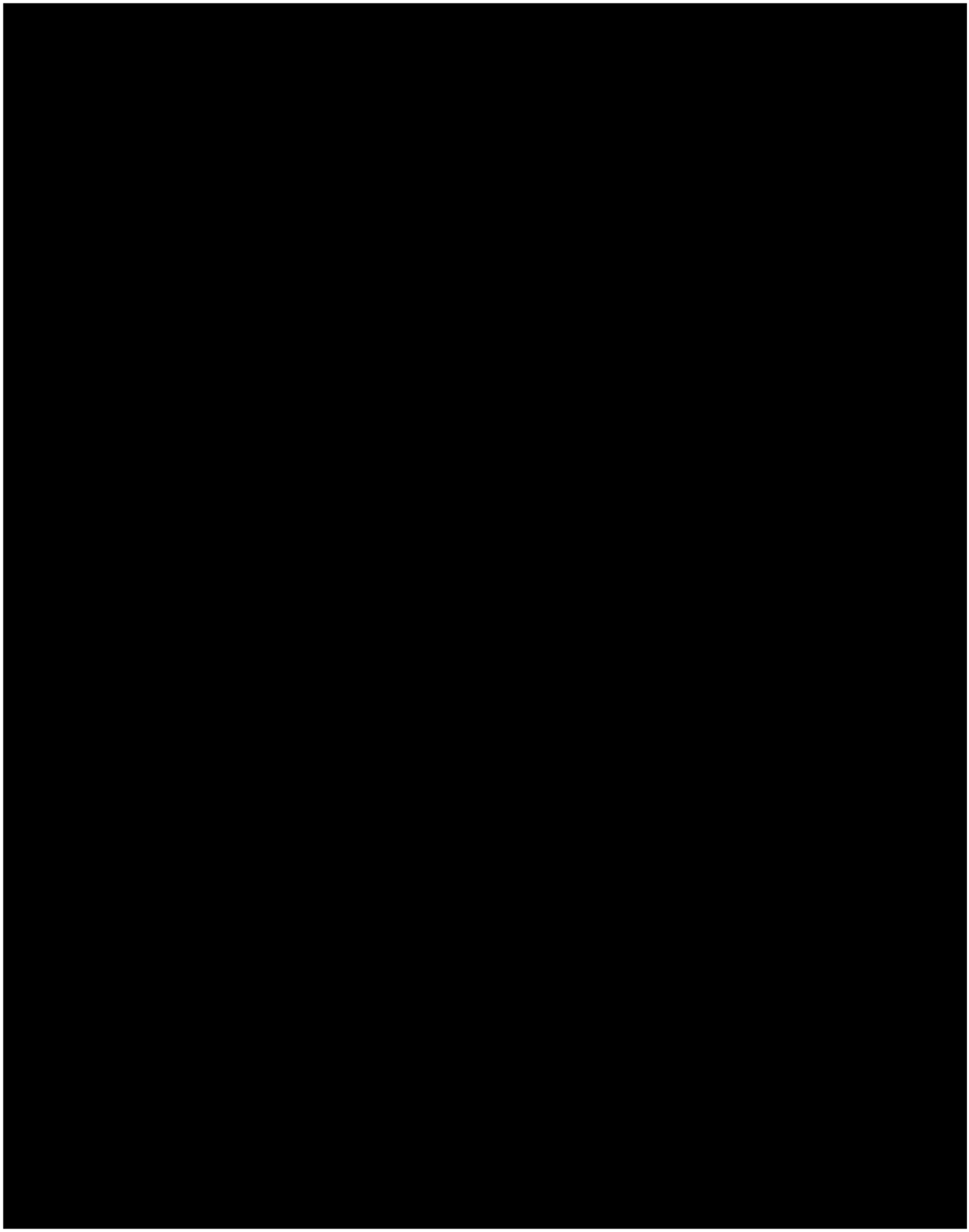


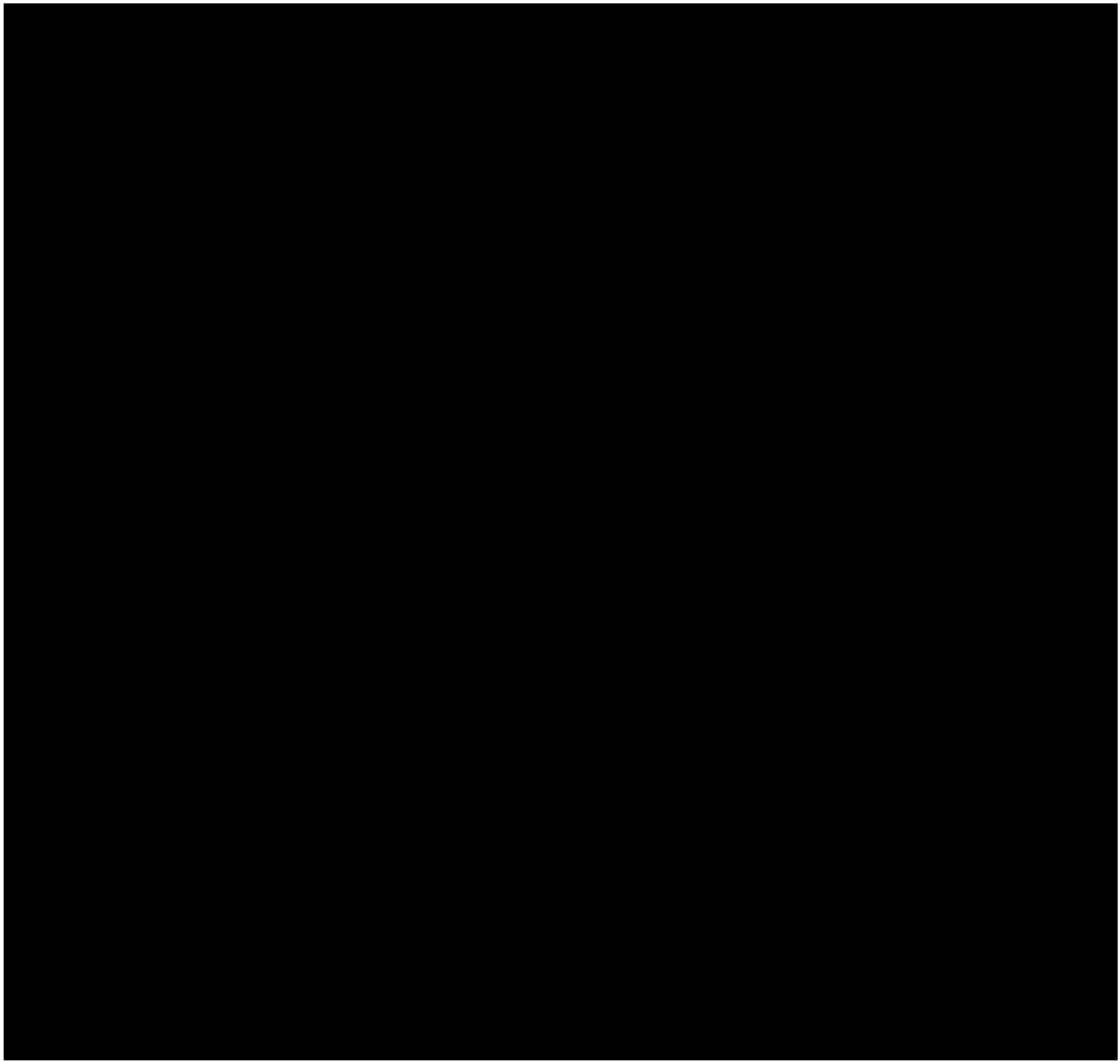
V. Facts Relating to Non-Infringement: "(111) Textured Hexagonal Atomic Template"

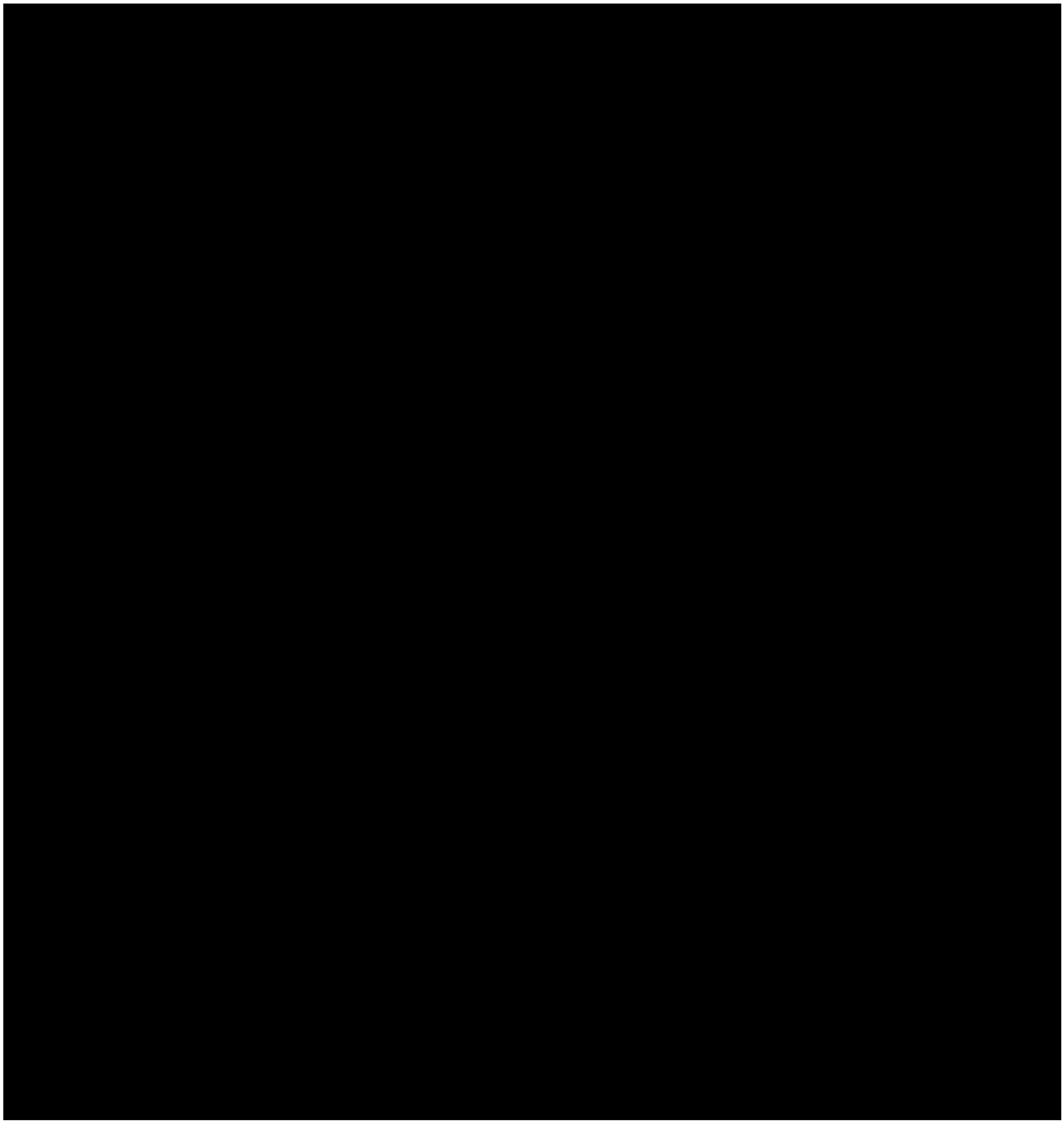


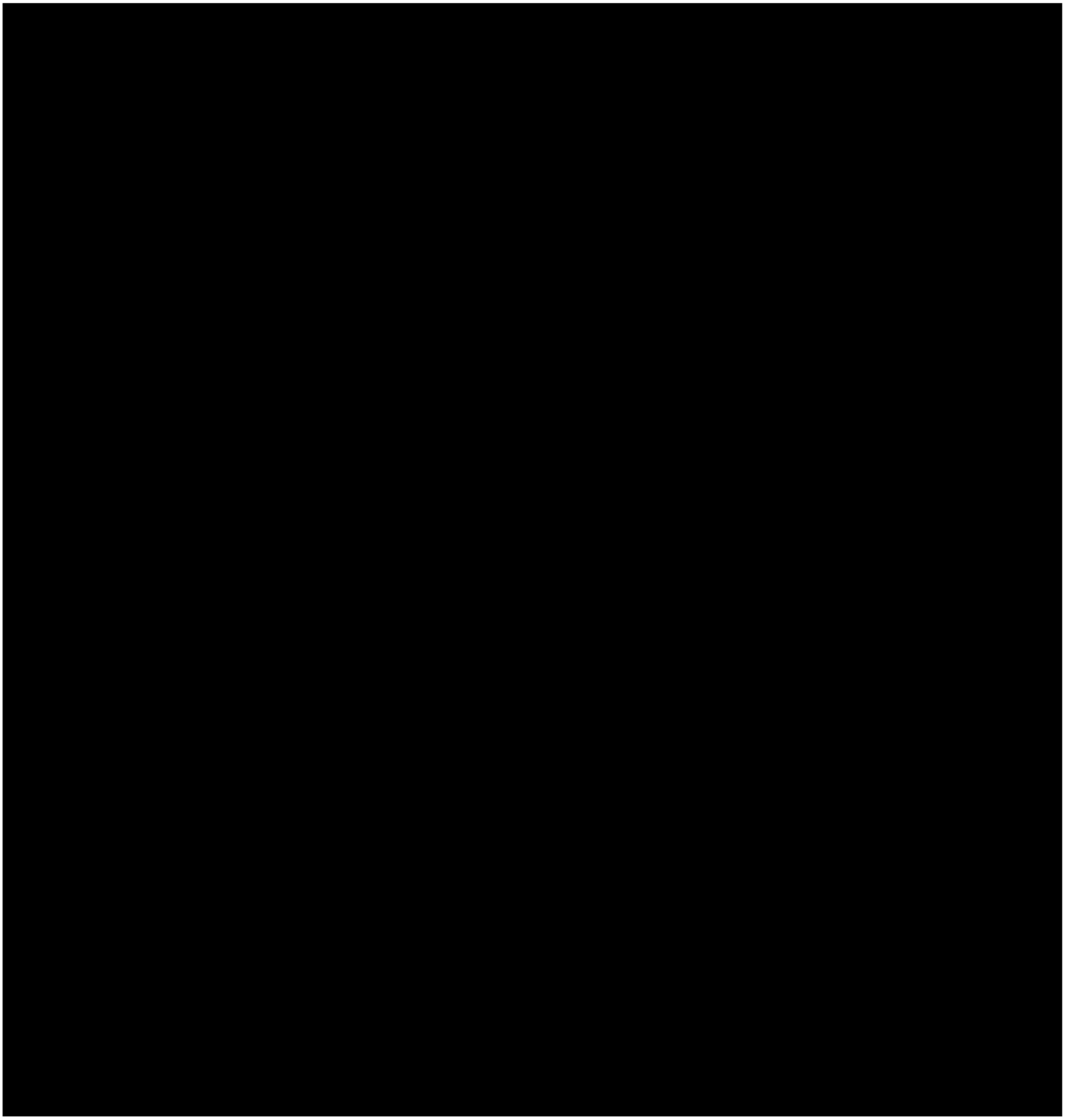


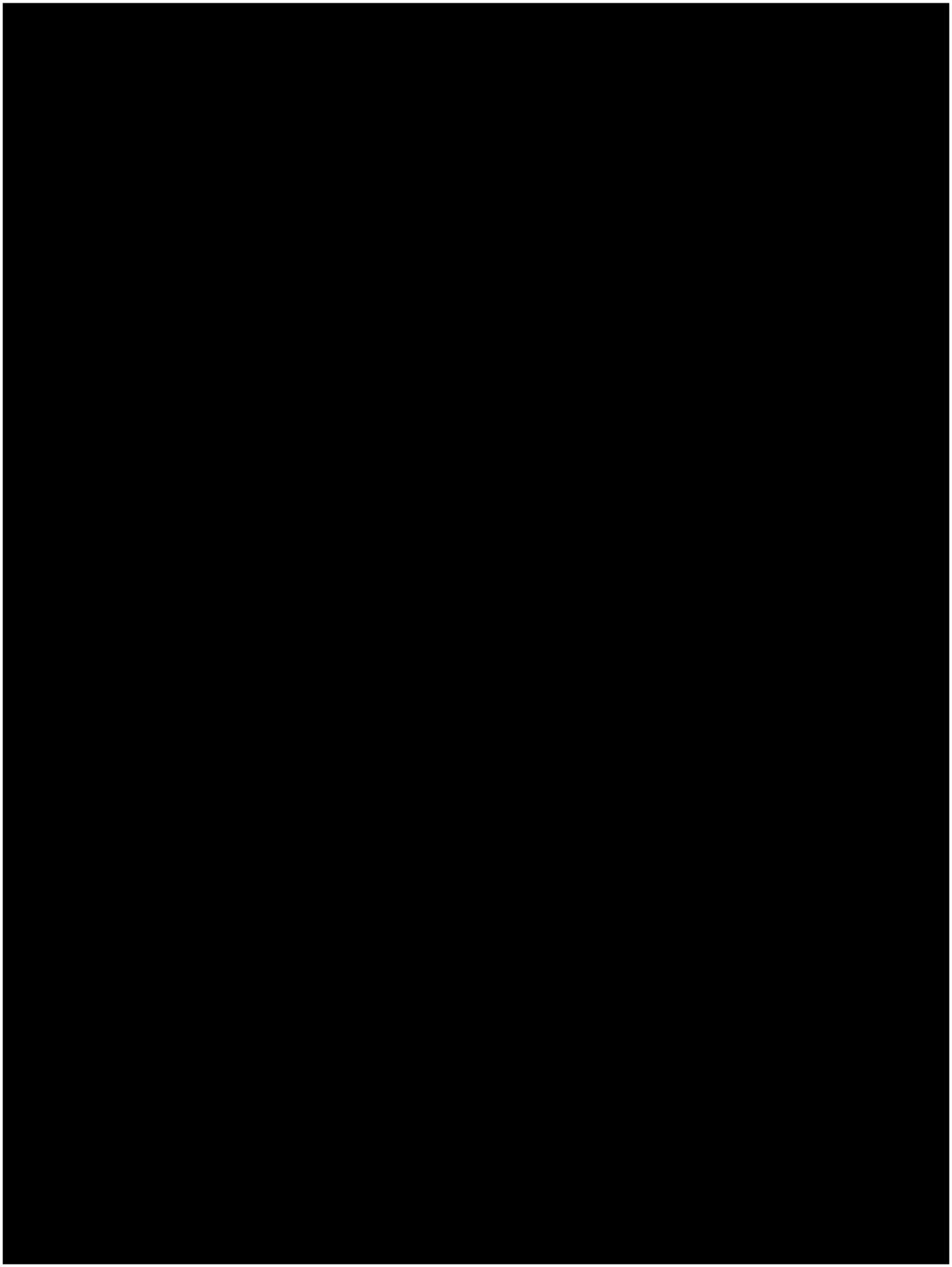


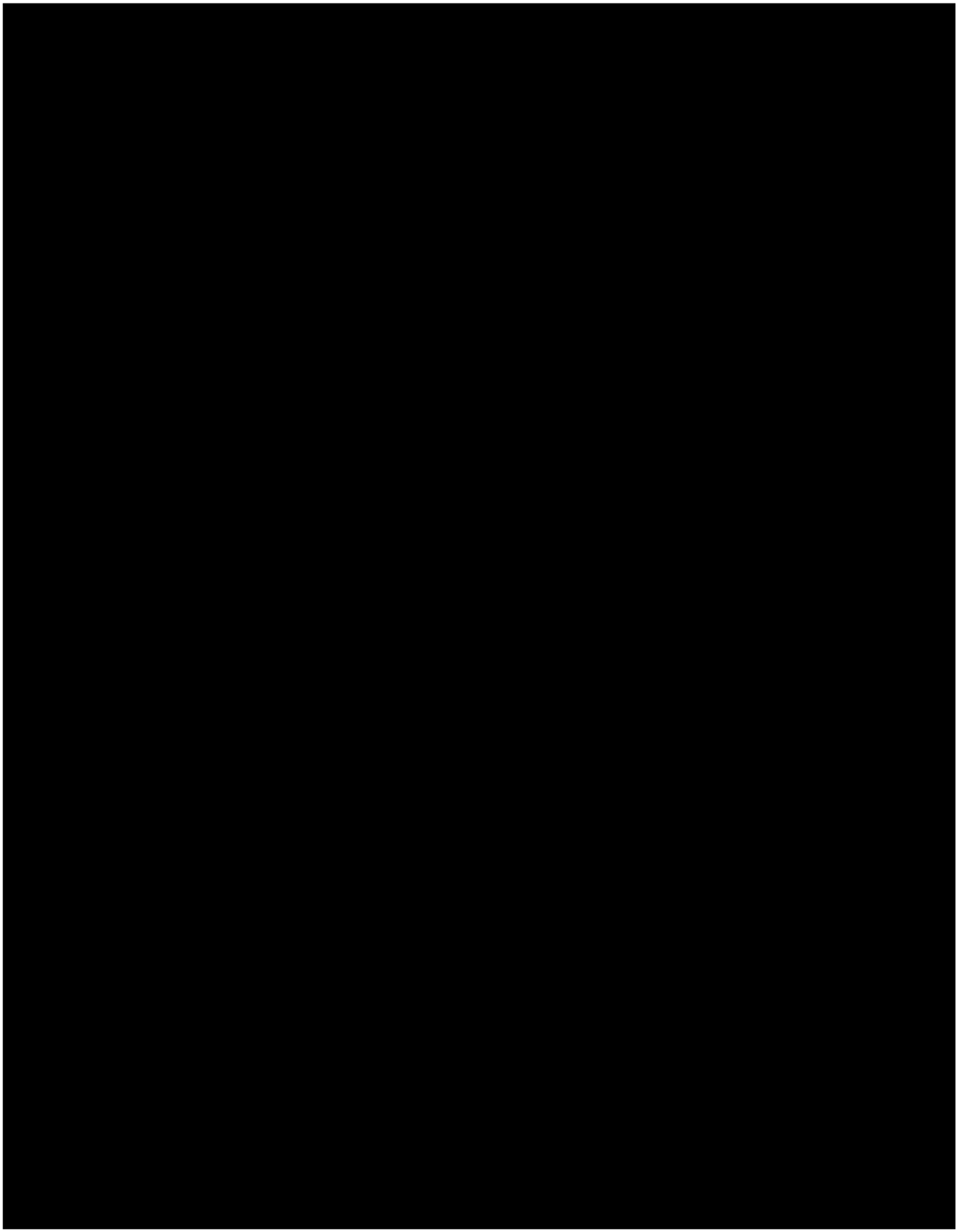


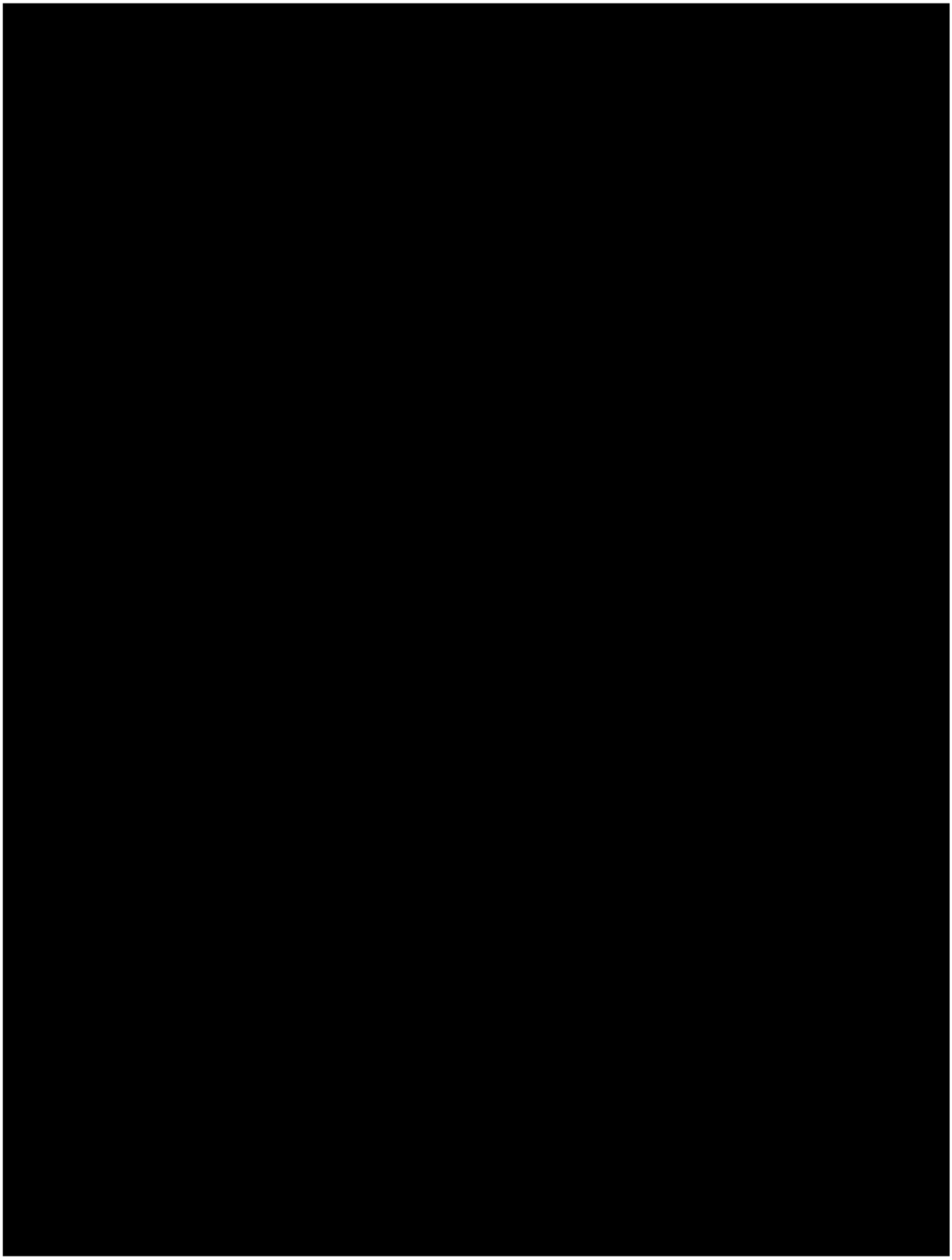


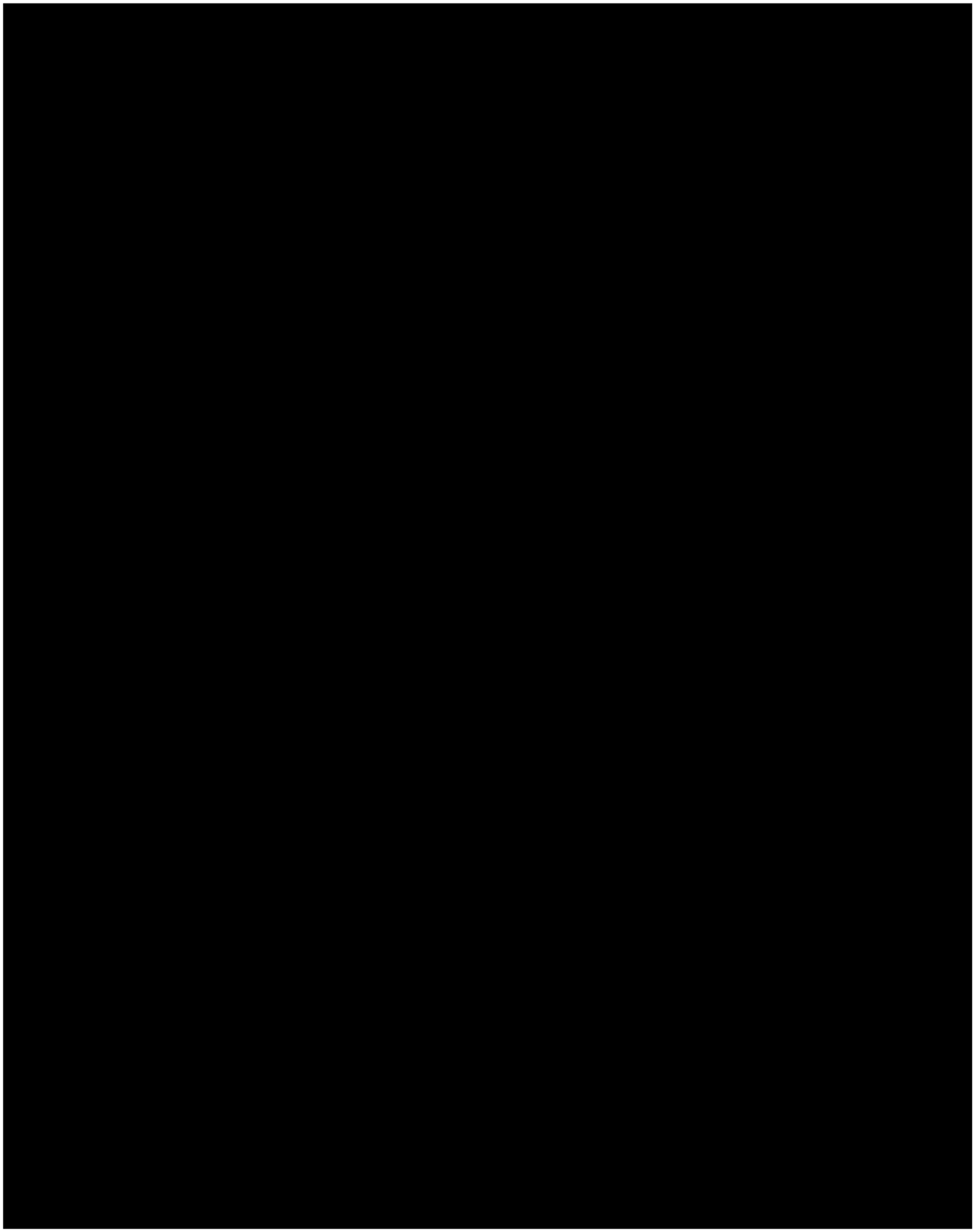


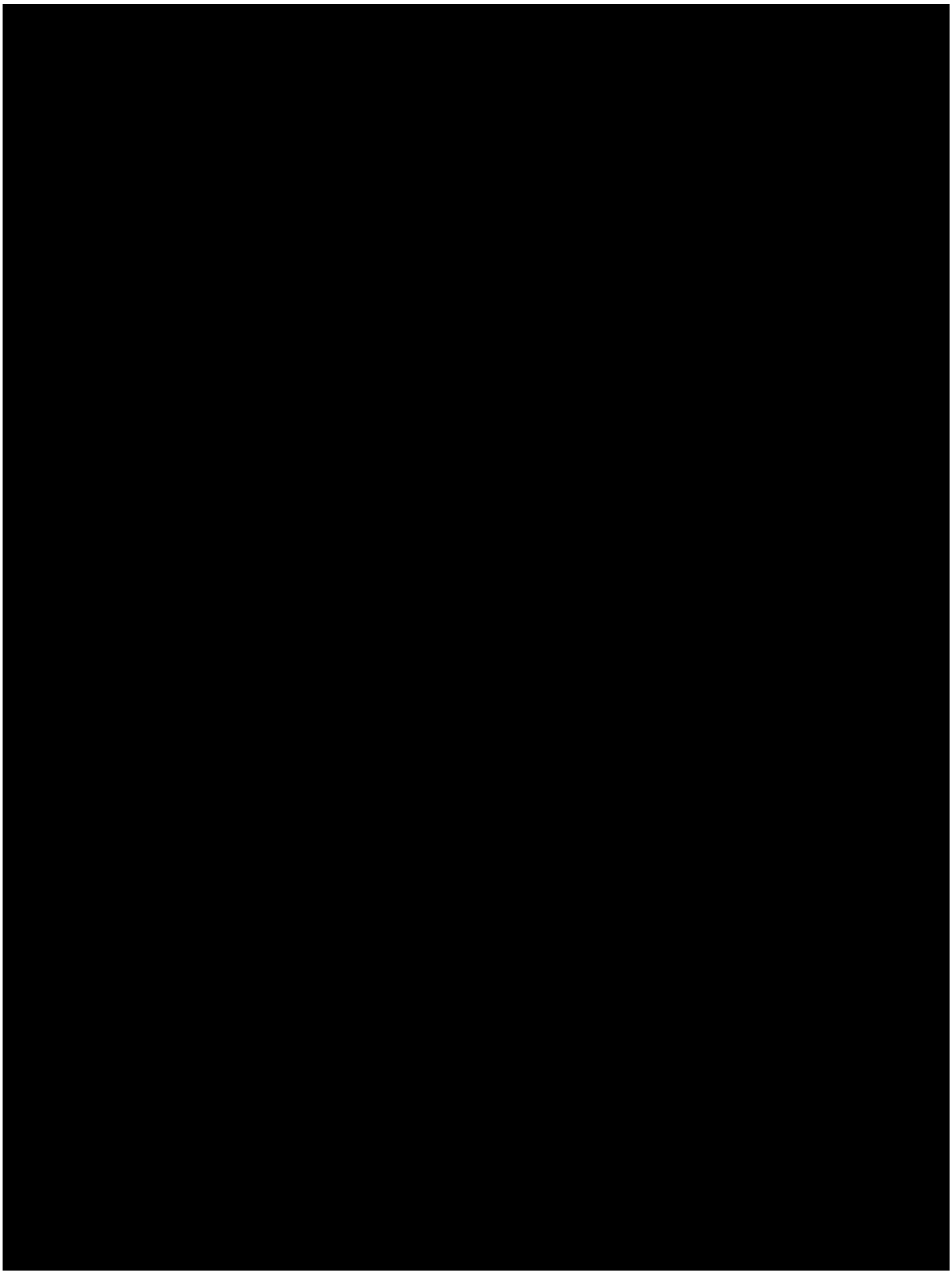


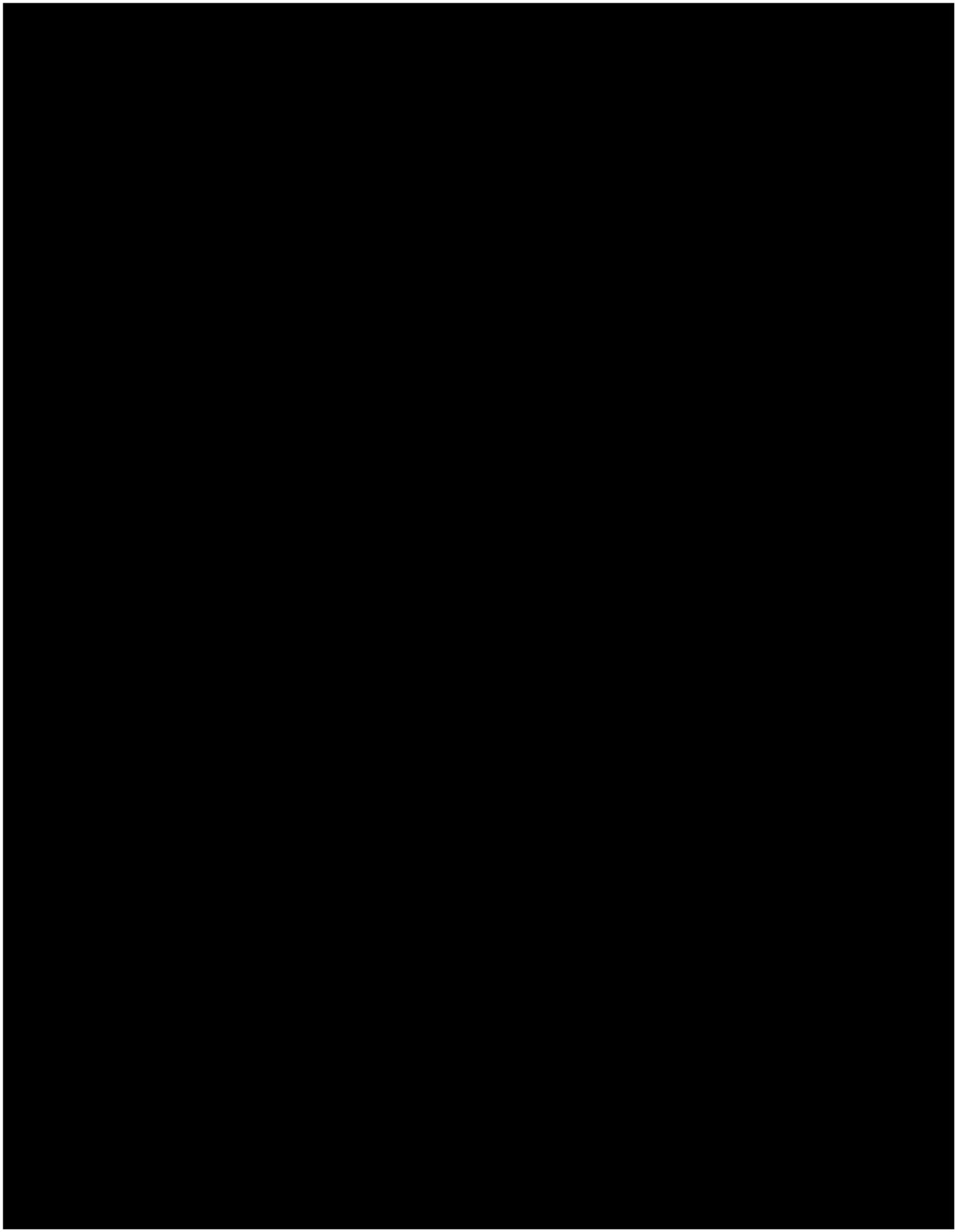


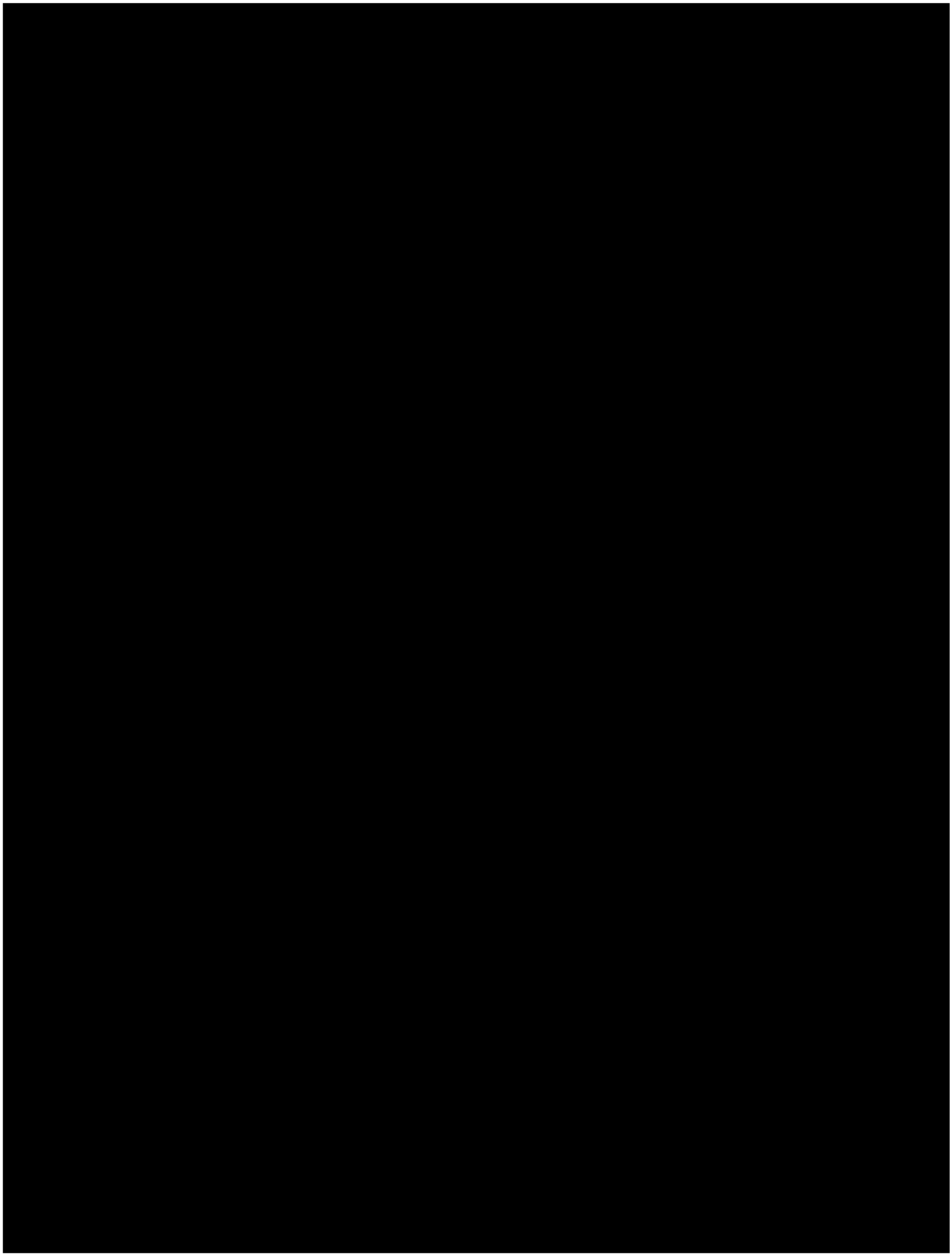


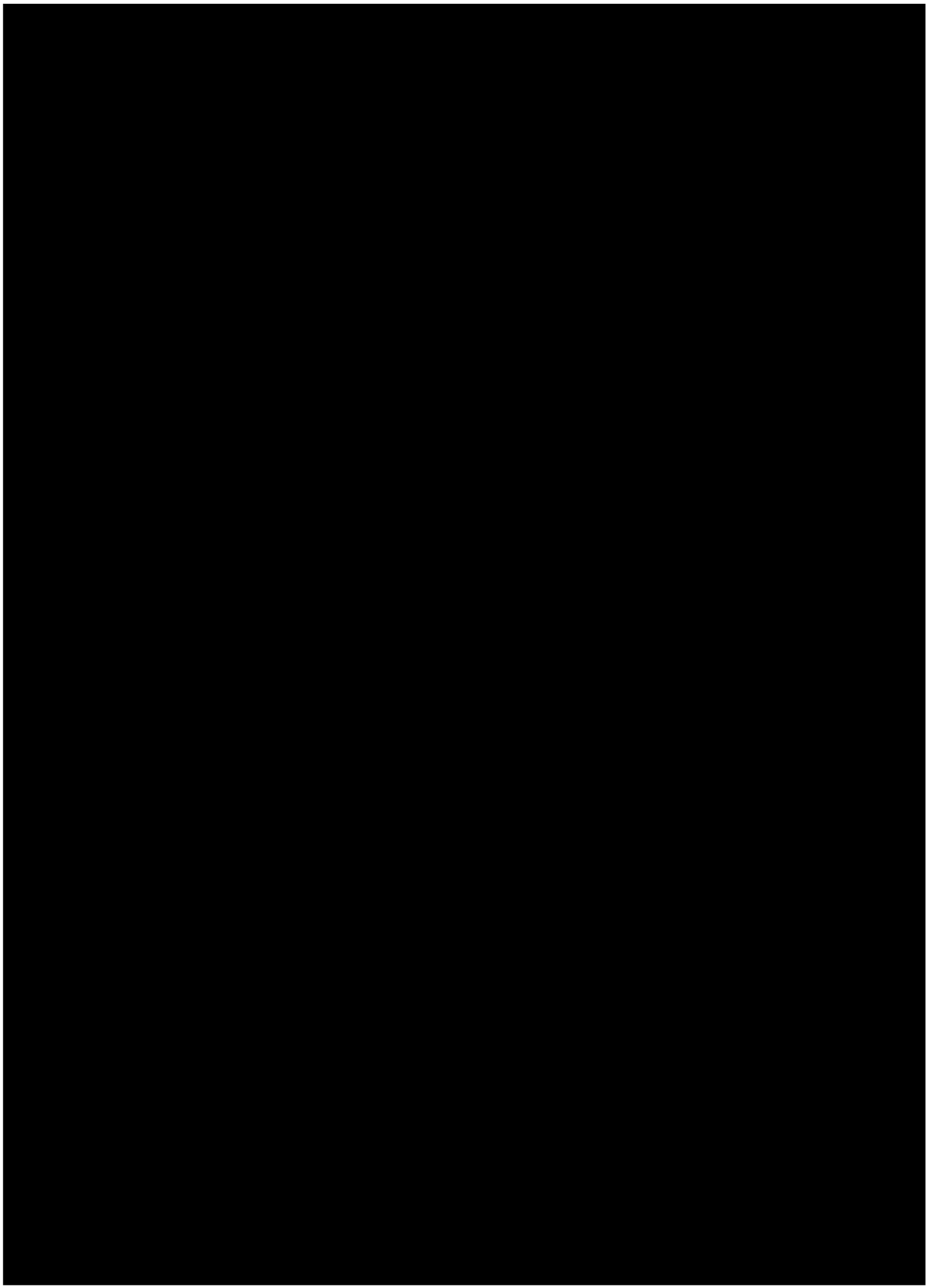












[redacted]

X. Material Facts Relating to Pre-Suit Damages

In this section, Seagate provides a concise statement of material facts relating to its contention that pre-suit damages are barred.

A. Lambeth Assigned the '988 Patent to SBS, an Acacia Subsidiary

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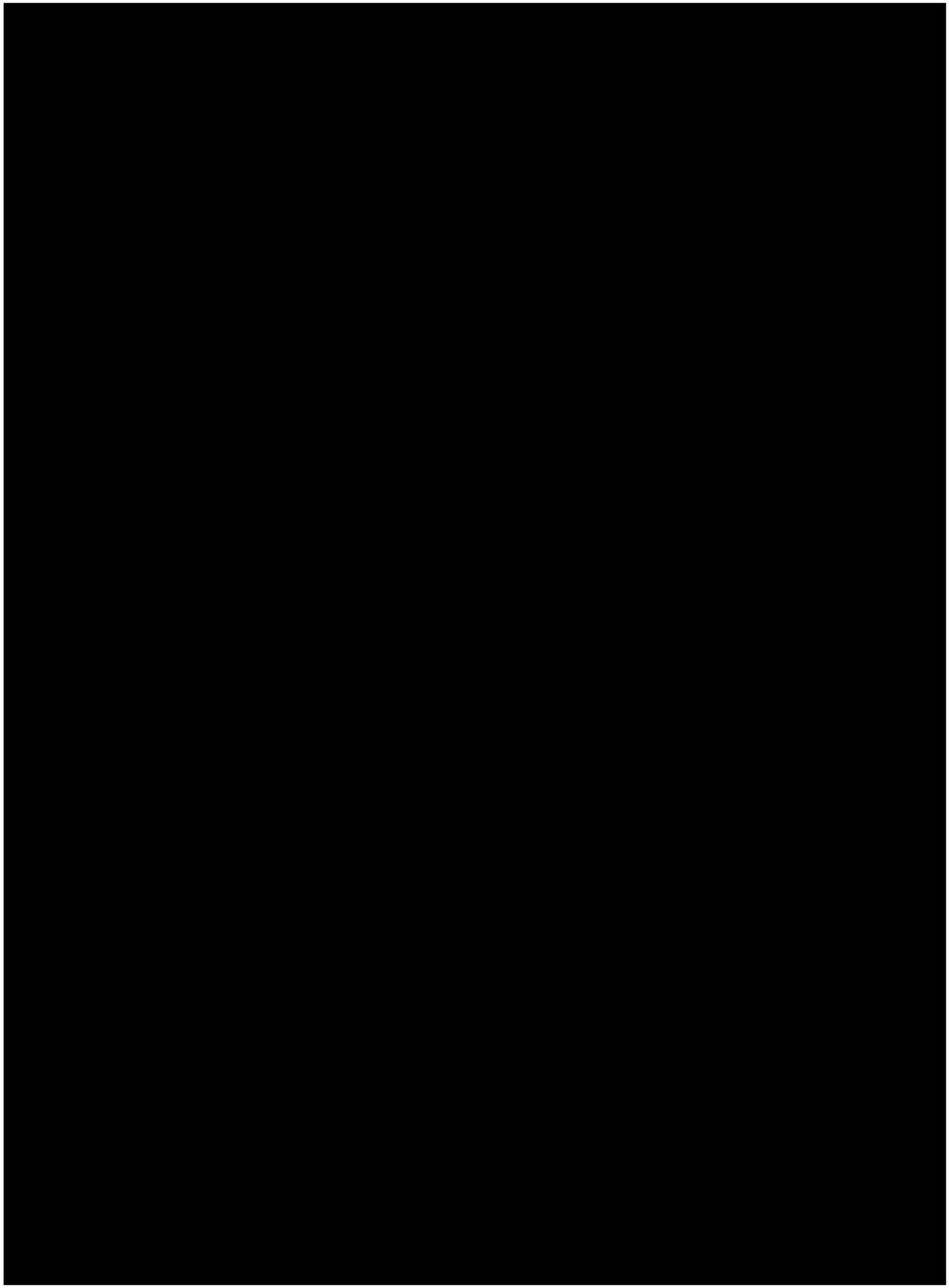
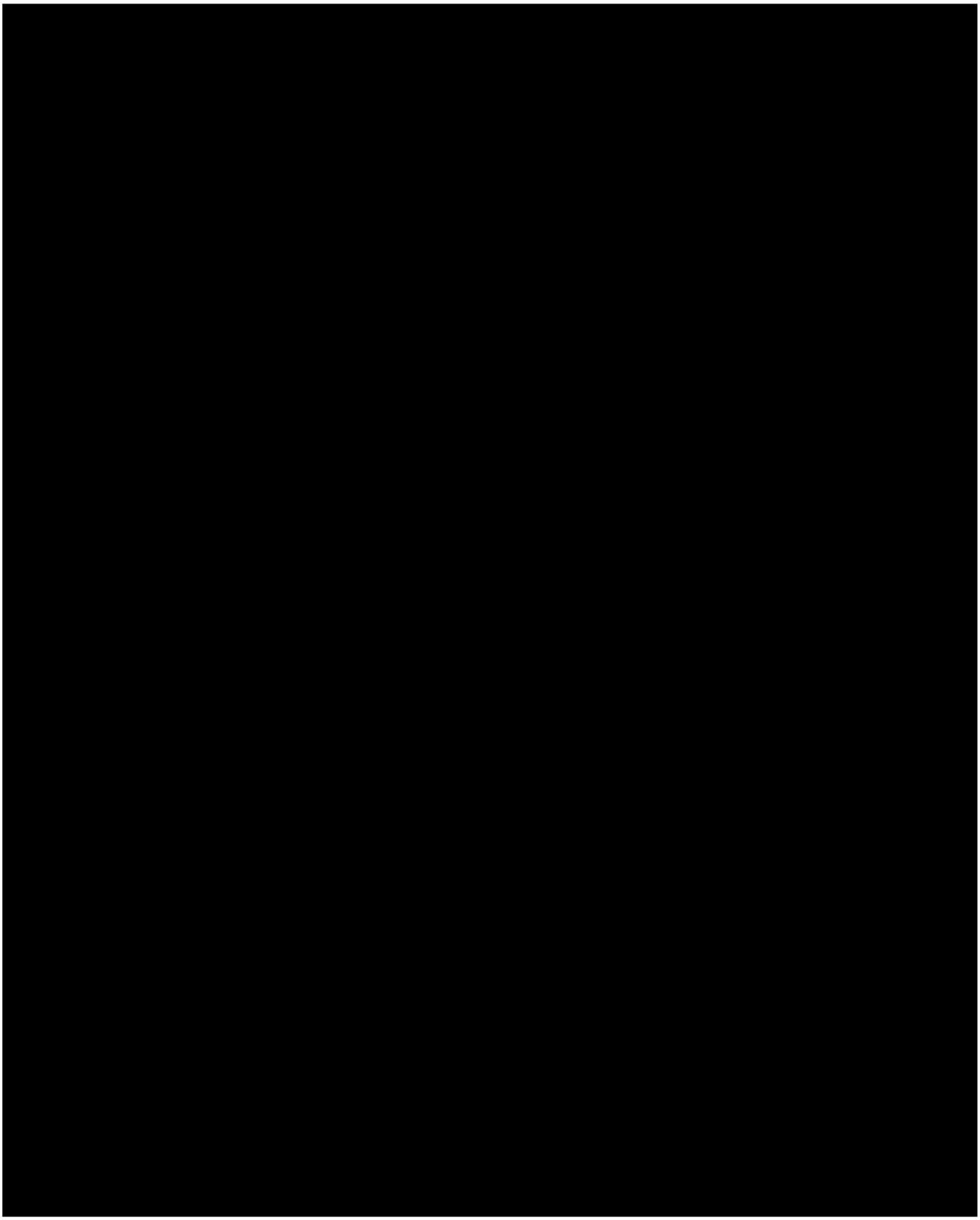
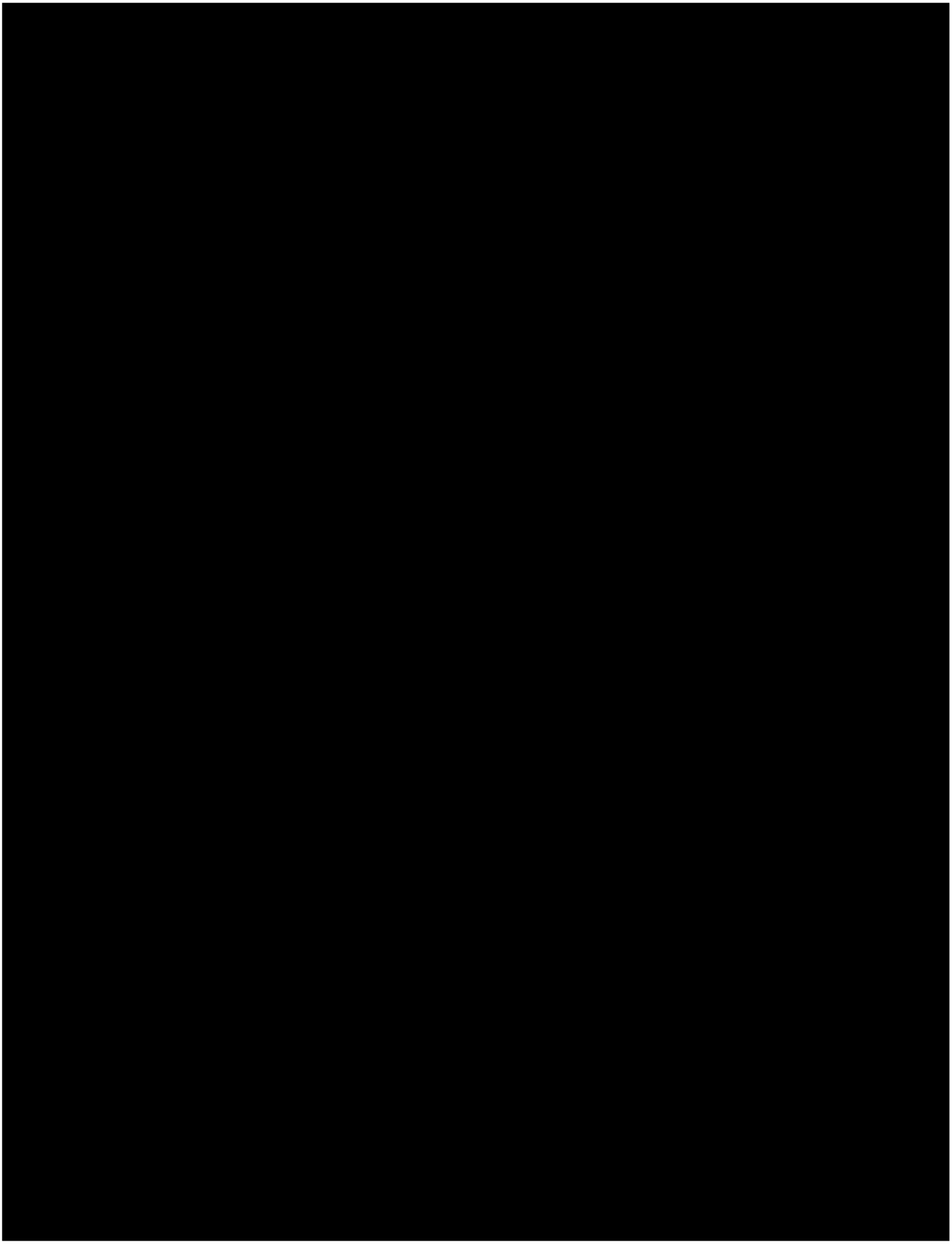
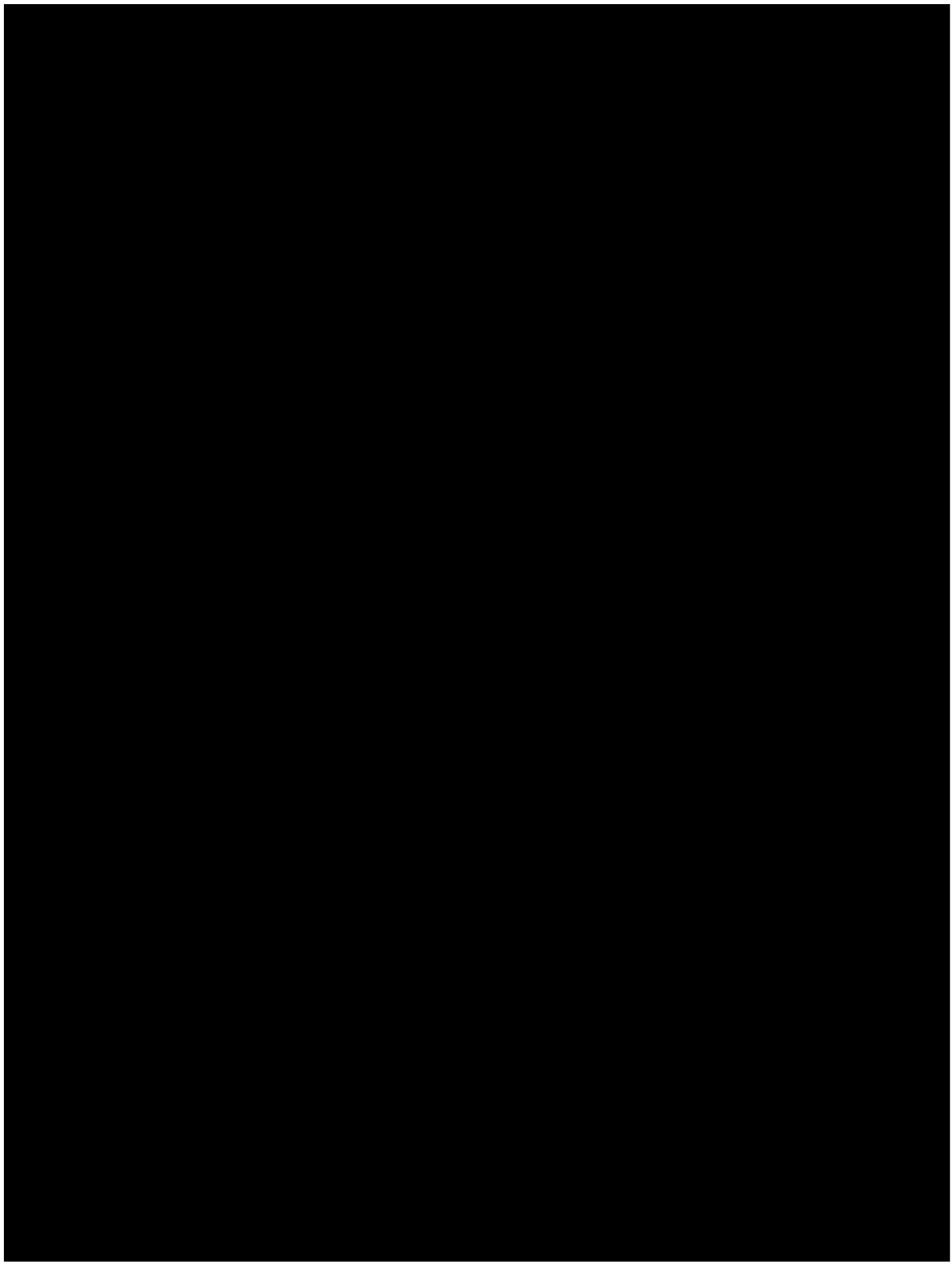
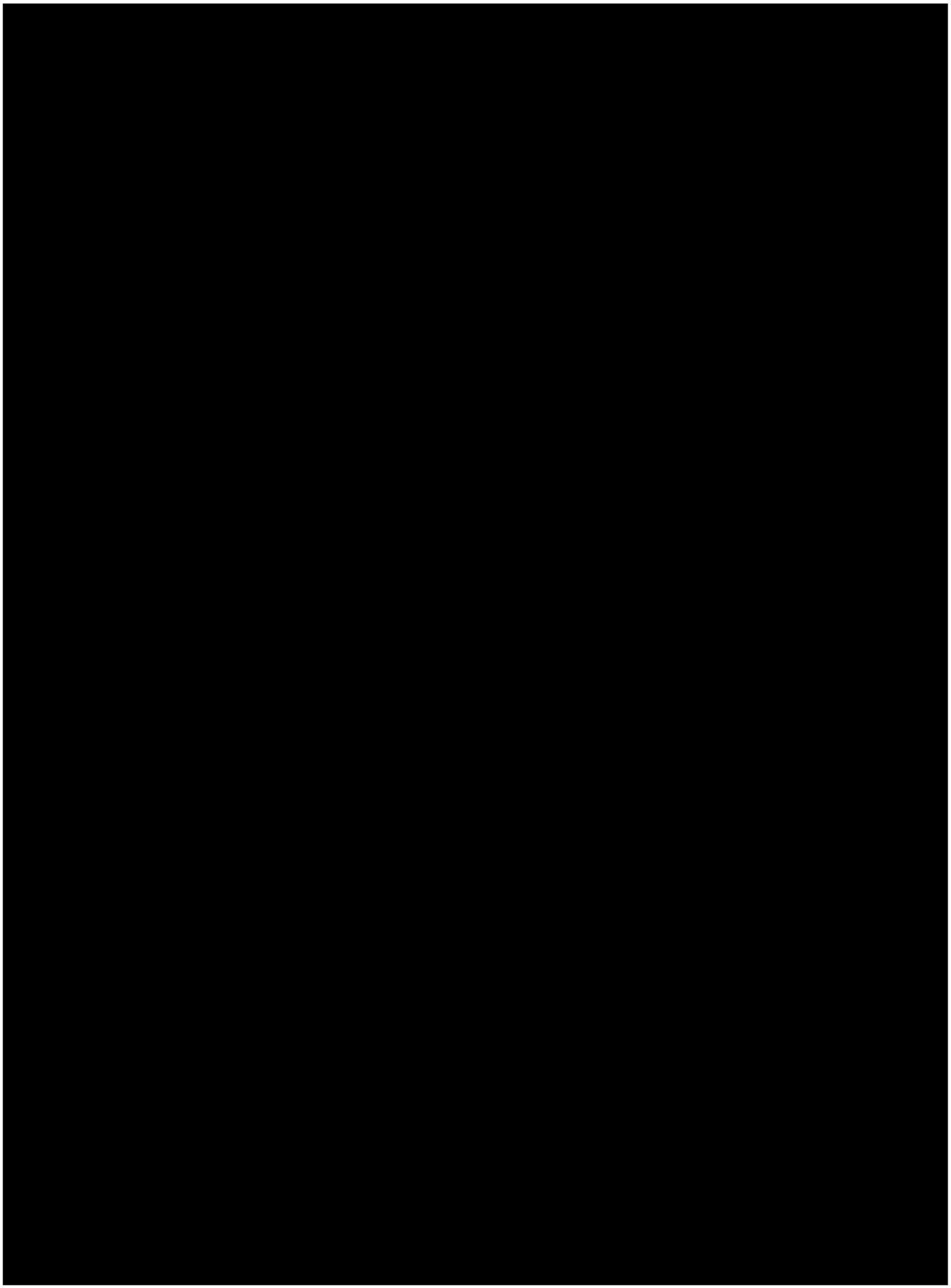
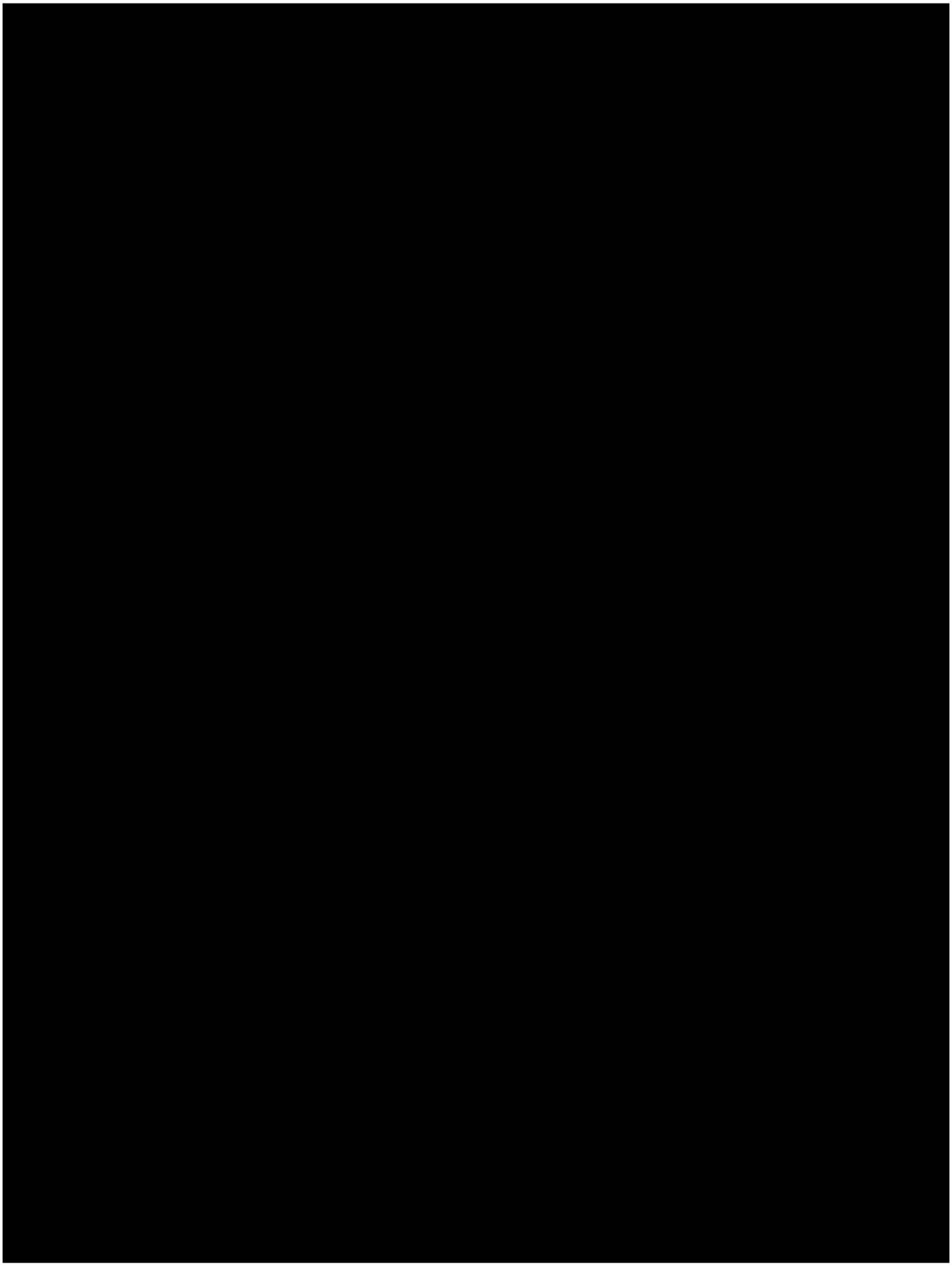


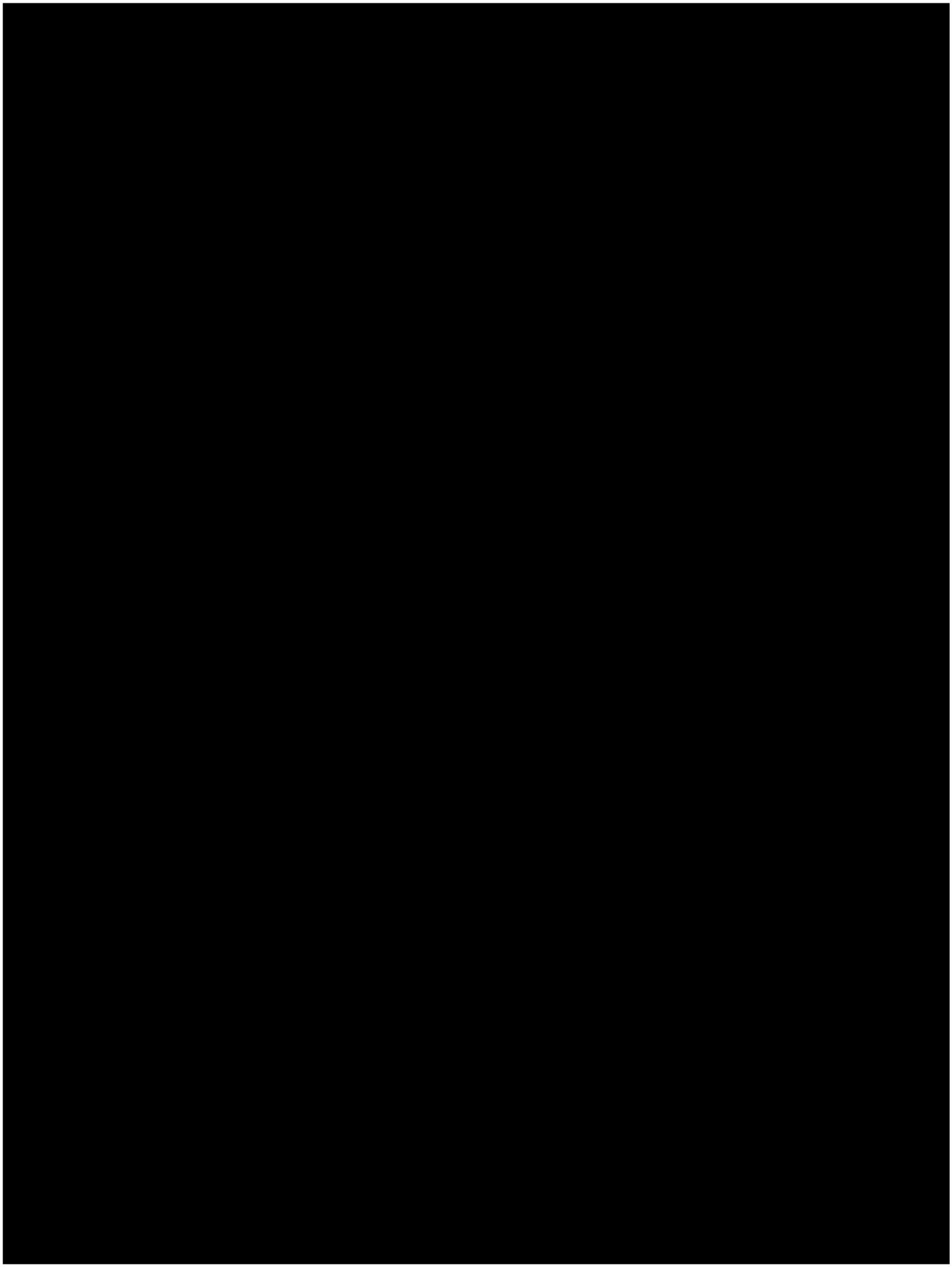










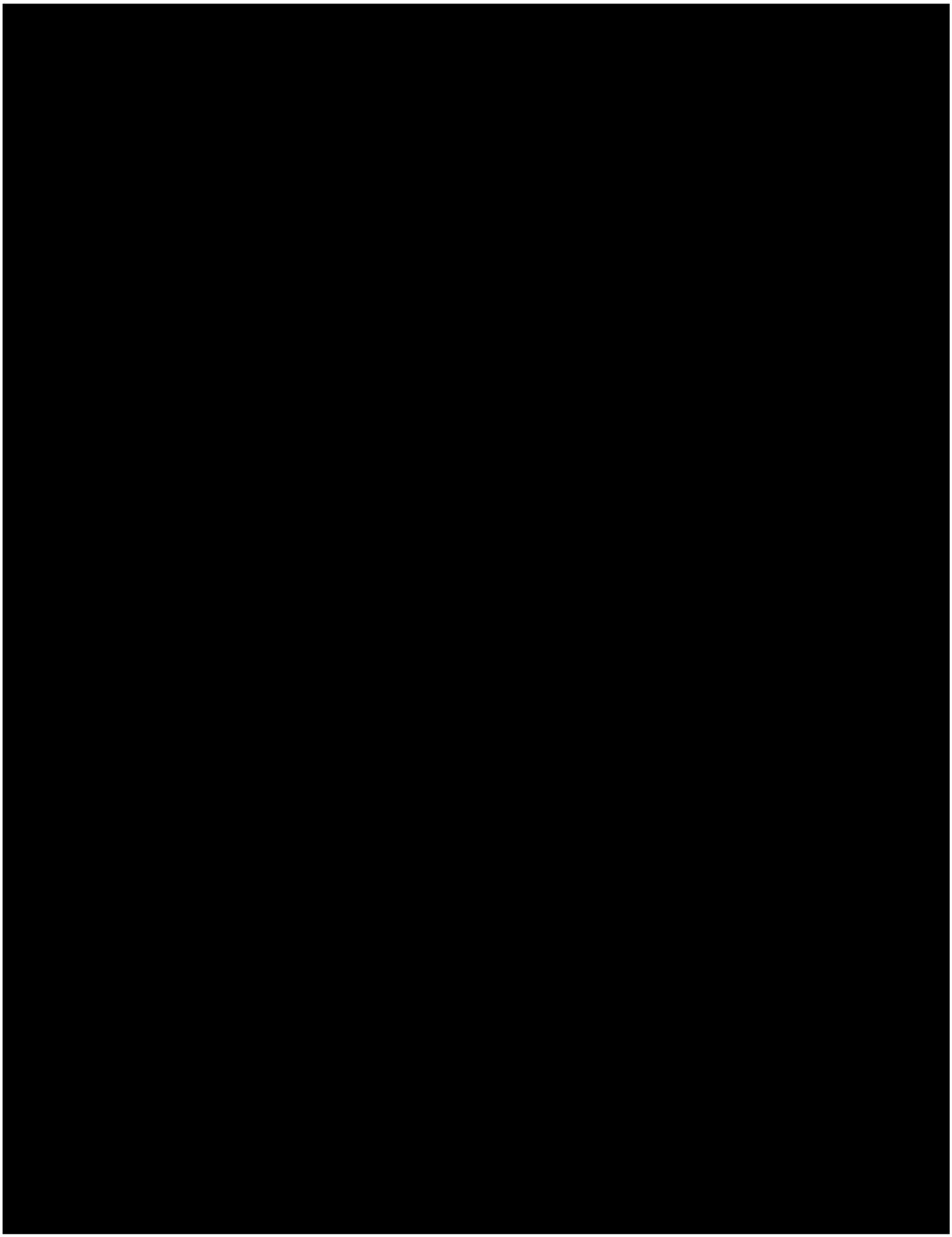


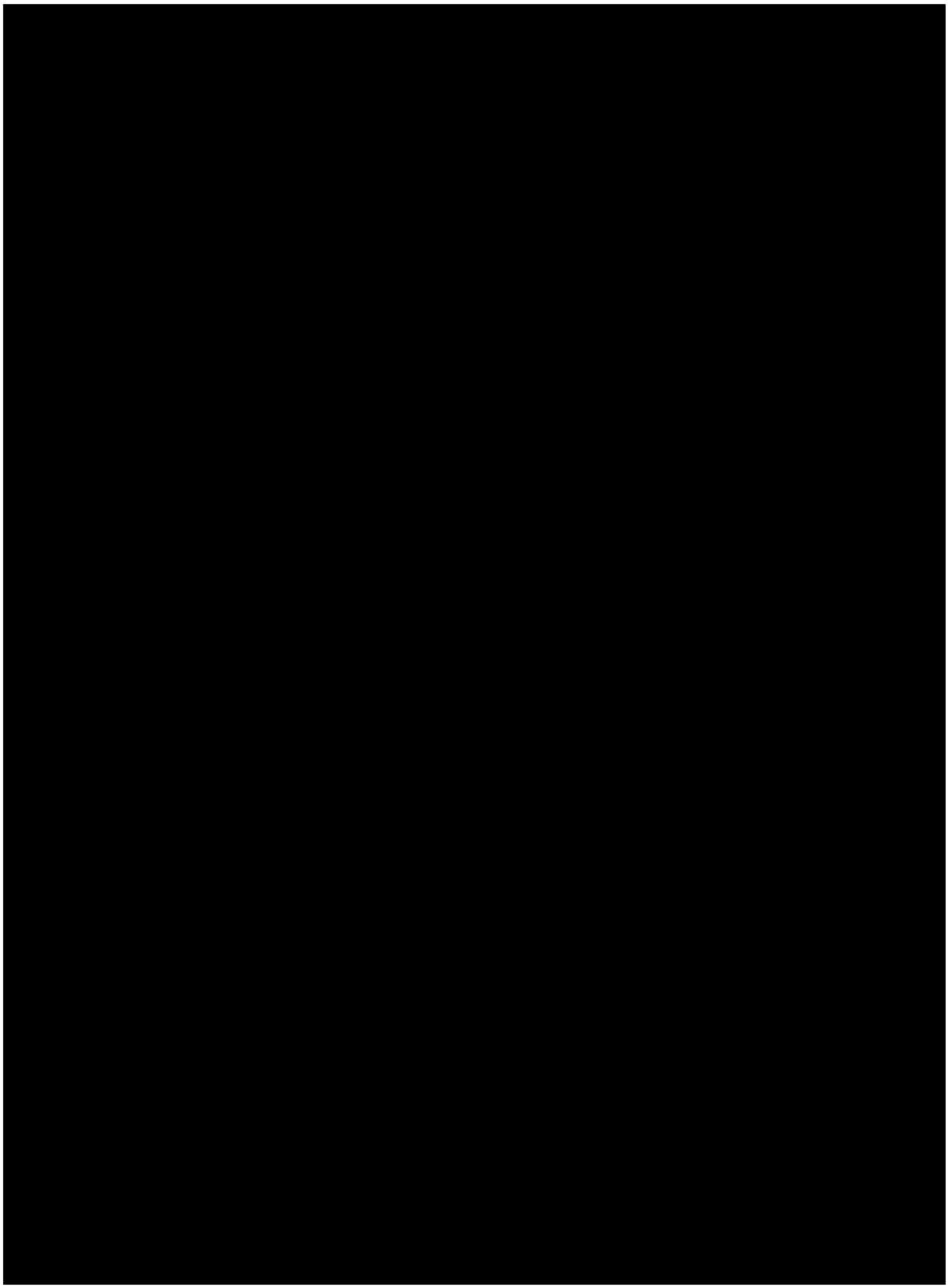
252. On March 1, 2013, Lambeth filed a complaint against Acacia and SBS in the Eastern District of Texas ("Acacia Lawsuit"), alleging that Acacia and SBS breached the Assignment Agreement by, among other things, licensing Lambeth's patents—including the '988 Patent—along with other patents to Samsung as part of the Samsung Agreement, allegedly in violation of the Assignment Agreement's anti-bundling provision (*see* Ex. 25, Lambeth Compl. Against Acacia ¶¶ 4, 34, 36, 38). Lambeth further alleged that Acacia and SBS undervalued Lambeth's patents in connection with the Samsung Agreement (*id.* ¶¶ 4, 40-46) and improperly

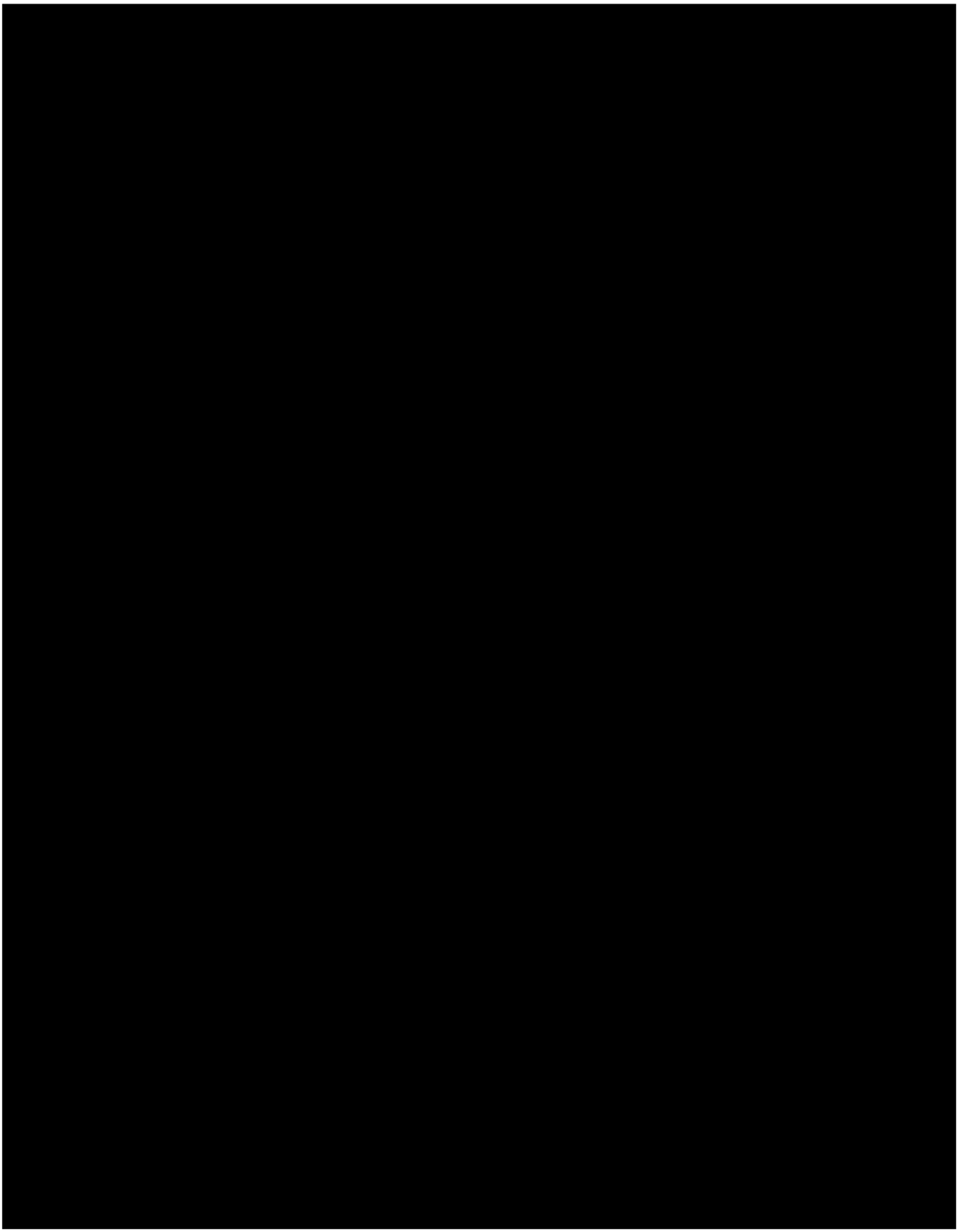
withheld a portion of Lambeth's share of the proceeds from the Samsung Agreement (*id.* ¶¶ 4, 47-57).

253. In its formal notice of default, attached as Exhibit D to its complaint against Acacia and SBS, Lambeth acknowledged that Acacia's "March 4, 2011 settlement with Samsung" included "a license to the patents and patent applications that are the subject of the [Assignment] Agreement." (*Id.* at Ex. D at 1.)

[redacted] In its complaint against Acacia and SBS, the relief Lambeth sought was an award of damages, pre-judgment and post-judgment interest, punitive damages, costs and attorneys' fees, and a return of the Lambeth Patents. (*Id.* at 18.) [redacted]

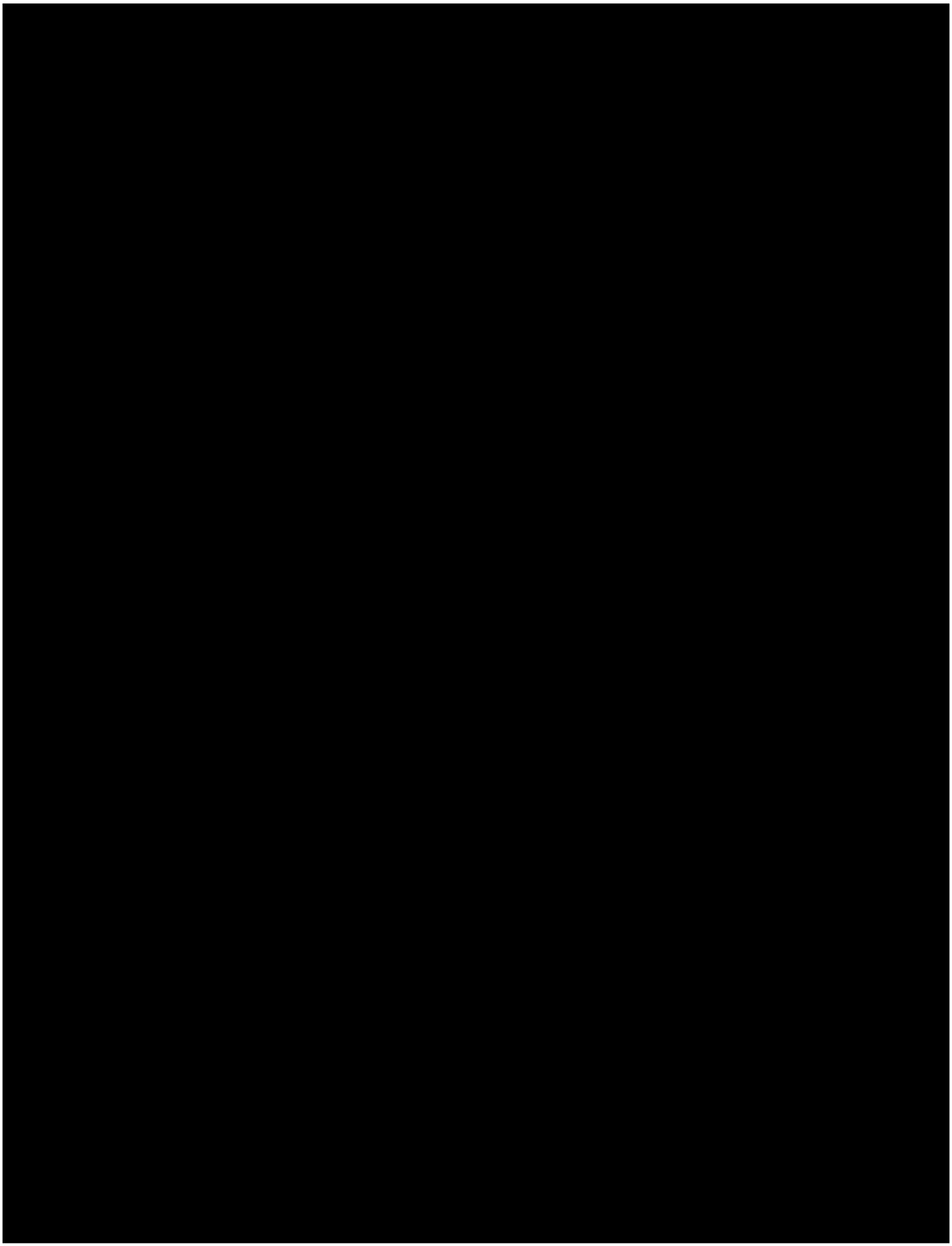


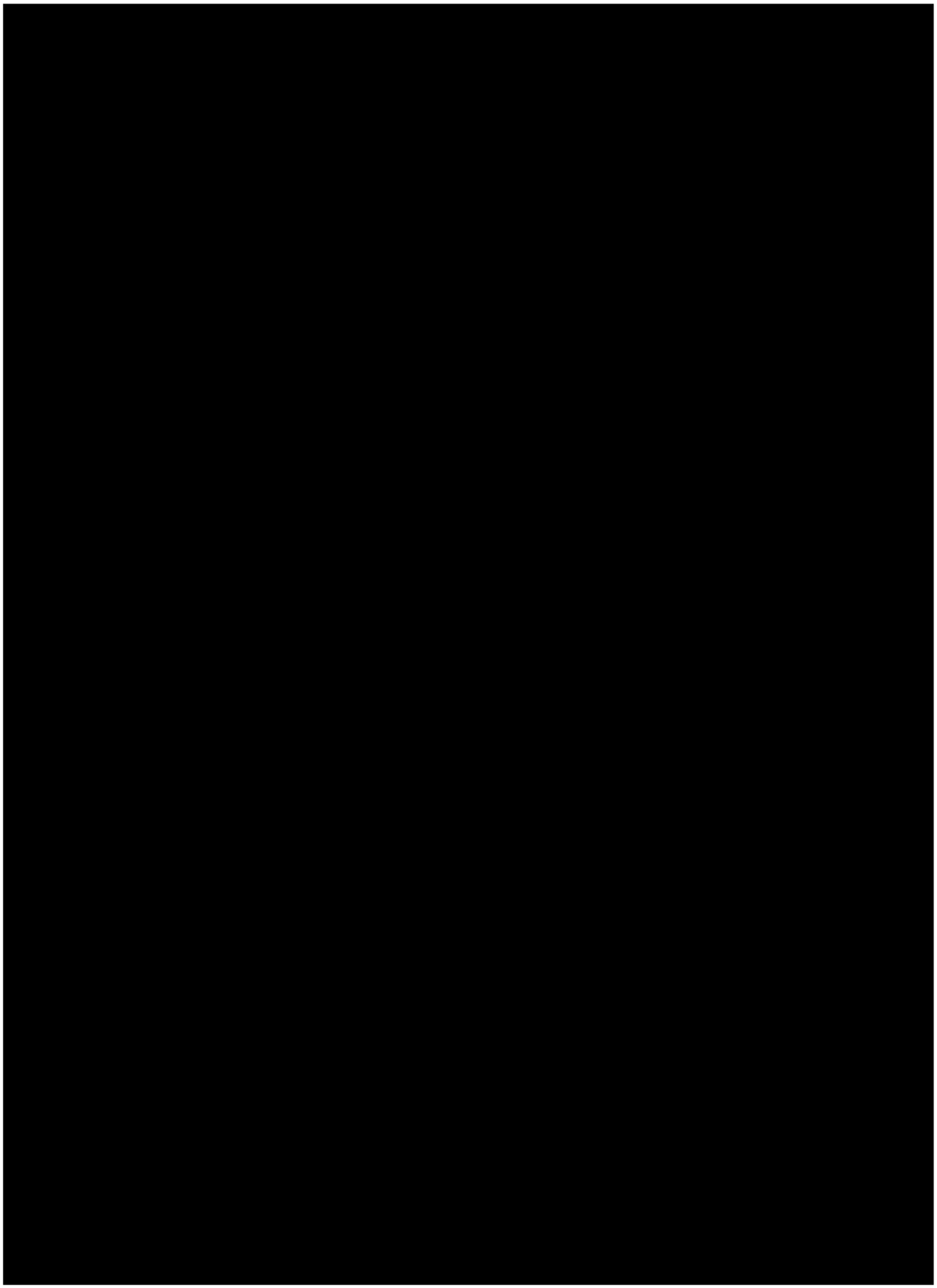




268. In its federal court complaint against Acacia, Lambeth stated that Acacia "entered into an agreement with Samsung" whereby the '988 patent, among others, "would be licensed to Samsung" (*id.* ¶ 34), and that Acacia "informed Lambeth that it licensed the ['988 Patent] . . . to Samsung" (*id.* ¶ 36). Lambeth's complaint did not state or otherwise suggest that the Samsung Agreement was void, invalid, or otherwise did not result in a valid transfer of rights. (*See id.*)

271. In its April 29, 2016, Complaint against Seagate, Lambeth acknowledged the Samsung license, stating that "certain hard drives . . . may be covered by a license to the '988 patent previously obtained by Samsung Corporation," but alleging that a majority of Seagate's HDDs "are not subject to this license." (Dkt. 1, Compl. Against Seagate ¶ 21.)





[redacted]

281. LMS has filed patent infringement lawsuits against all of the major HDD manufacturers (*i.e.*, Seagate, Toshiba, Western Digital, and Hitachi), alleging that all of their PMR HDDs infringe the '988 Patent. (*See* Dkt. 1, Compl. Against Seagate; Ex. 29, Toshiba Compl.; Ex. 28, WD and Hitachi Compl.)

1. LMS Sued Seagate, Alleging that All of Seagate's PMR HDDs Practice the '988 Patent

282. On April 29, 2016, LMS filed its Complaint in this case, alleging that Seagate directly and indirectly infringes the '988 Patent by making, using, selling, offering to sell, and/or importing hard disk drives ("HDDs") in the United States. (Dkt. 1, Compl. Against Seagate ¶¶ 19-31.)

[redacted]

[redacted]

285. The Complaint also specifically alleges that Seagate's allegedly infringing HDDs are incorporated into Microsoft Xbox products, as well as other third-party products such as laptop and desktop computers, that are sold in the United States. For example, the Complaint alleges that Seagate's HDDs "are incorporated in Hard Disk Drive Devices that are sold in the United States . . . , including but not limited to laptop computers, desktop computers . . . , Xbox and Playstation game consoles, and servers." (Dkt. 1, Compl. Against Seagate ¶ 27.) It further alleges that Seagate's allegedly infringing products are "included in third-party Hard Disk Drive Devices, such as game consoles, servers, and computers, including . . . Xbox . . . game consoles . . . sold and/or imported into the United States." (*Id.* ¶ 30; *see also id.* ¶ 31 (alleging that Seagate induces others to import, make, use, sell, and/or offer to sell Xbox game consoles with allegedly infringing Seagate products in the United States).)

[redacted]

2. LMS Sued Toshiba and TDK, Alleging that All of Toshiba's PMR HDDs and TDK's PMR Heads and/or HGAs Practice the '988 Patent

287. On November 6, 2014, LMS filed a complaint against Toshiba Corporation, a manufacturer of HDDs, alleging infringement of the '988 Patent (the "Toshiba/TDK Lawsuit"). *See Lambeth Magnetic Structures v. Toshiba Corp.*, Case No. 2:14-cv-1526-CB (W.D. Pa.) (Dkt. 1, Compl. Against Seagate). In its Third Amended Complaint in the Toshiba/TDK Lawsuit, LMS also accused TDK Corporation—a manufacturer of write heads for HDDs—along with other TDK-related entities, including SAE Magnetics H.K. Ltd. ("SAE") and Headway Technologies, Inc. ("Headway") (collectively, "TDK")—of infringing the '988 Patent. (Ex. 29, Toshiba Compl.)

[redacted] In its complaint, LMS alleged that Toshiba's HDDs infringed the '988 patent. (*See, e.g., id.* ¶¶ 35-38, 44-47, 52-56.) [redacted]

289. LMS also alleged that TDK's PMR heads and PMR head gimbal assemblies ("HGAs"), which include PMR heads, infringe the '988 Patent. (*See* Ex. 29, Toshiba Compl. ¶¶ 73-86 (accusing SAE's PMR heads, wafers, and sliders of infringing the '988 Patent); *id.* ¶¶ 92-102 (accusing Headway's PMR heads, wafers, and sliders of infringing the '988 Patent); *id.* ¶¶ 108-109 (alleging that "TDK provides instrumentalities containing PMR heads, *e.g.*, PMR HGAs, to hard disk drive manufacturers," and TDK's PMR HGAs "are incorporated into Hard Disk Drive Devices including the accused Toshiba Hard Disk Drive Devices and Hard Disk Drive Devices of other hard disk drive manufacturers"); *id.* ¶¶ 112, 114-117.)

290. LMS also accused TDK's customers—including Toshiba and other HDD manufacturers—of directly infringing the '988 patent by incorporating TDK's PMR products into third-party HDDs, computers, servers, and/or game consoles, and then selling and/or importing those devices into the United States. (*Id.* ¶¶ 119-120.)

[redacted]

3. LMS Sued Western Digital and Hitachi, Alleging that All Western Digital and Hitachi PMR HDDs Practice the '988 Patent

293. On May 2, 2016, LMS filed a complaint against Western Digital Corporation and other related entities (collectively, "Western Digital") and HGST, Inc. ("Hitachi"), in the matter entitled *Lambeth Magnetic Structures v. Western Digital Corp.*, Case No. 2:16-cv-541-CB (W.D. Pa.) ("WD/Hitachi Lawsuit"), alleging that Western Digital's and Hitachi's HDDs infringe the '988 Patent. (Ex. 28, WD and Hitachi Compl.)

[redacted] In the WD/Hitachi Lawsuit, LMS contends that all of Western Digital's and Hitachi's PMR HDDs practice the '988 Patent. (*See, e.g.*, *id.* ¶ 24 (identifying representative Western Digital HDDs alleged to infringe the '988 Patent); *id.* ¶ 34 (identifying representative Hitachi HDDs alleged to infringe the '988 Patent); [redacted]

[redacted]

[redacted]LMS also alleges that Western Digital HDDs used in Microsoft Xboxes infringe the '988 Patent. (*See* Ex. 28, WD and Hitachi Compl. ¶ 24 (accusing HDDs used as "gaming storage" for the Xbox); *id.* ¶ 30 (alleging that Western Digital infringes the '988 Patent "by making, using, selling, offering to sell, and/or importing magnetic heads that are incorporated in Hard Disk Drive Devices that are sold in the United States . . . , including but not limited to . . . Xbox . . . game consoles"); [redacted]

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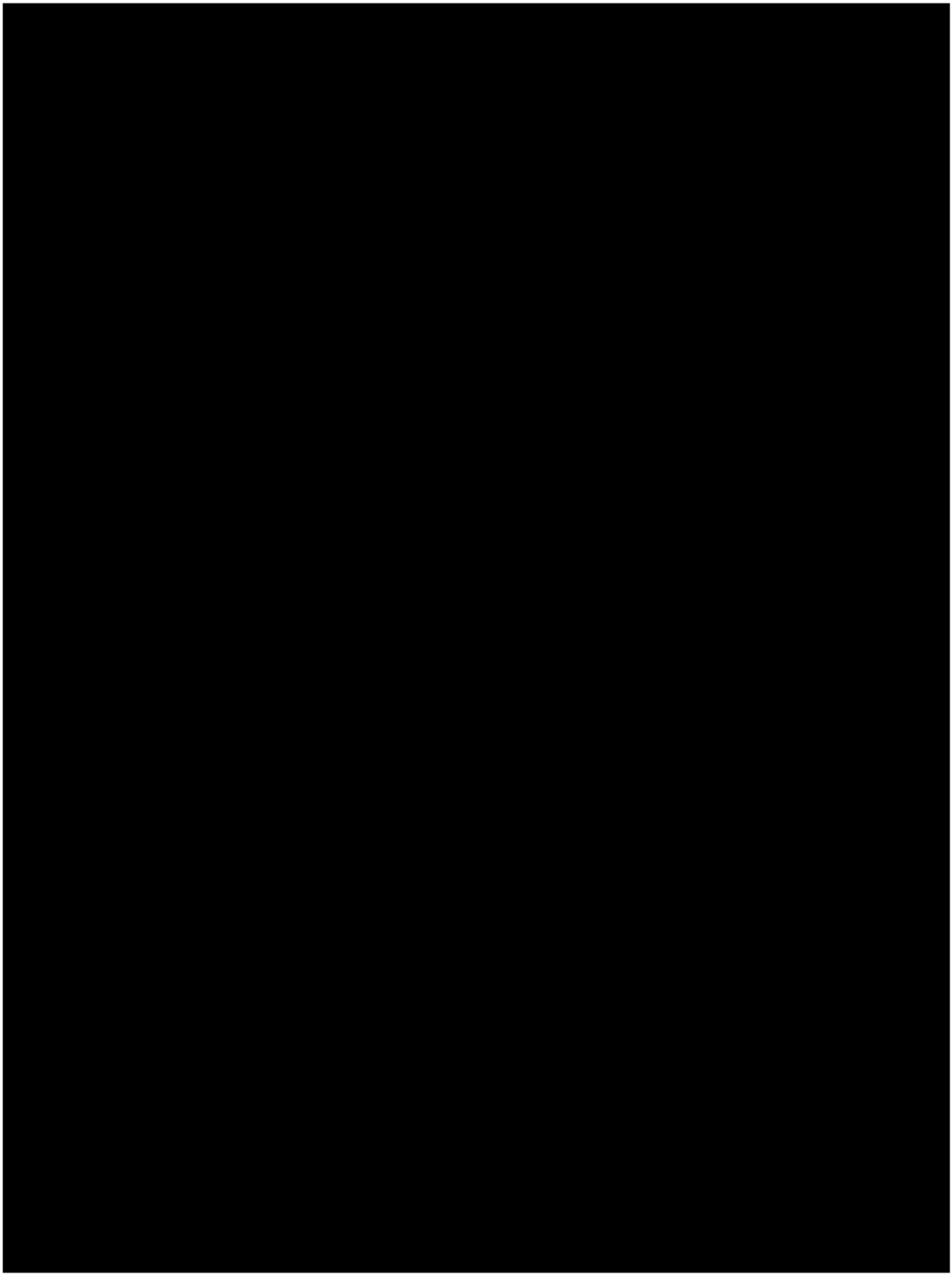
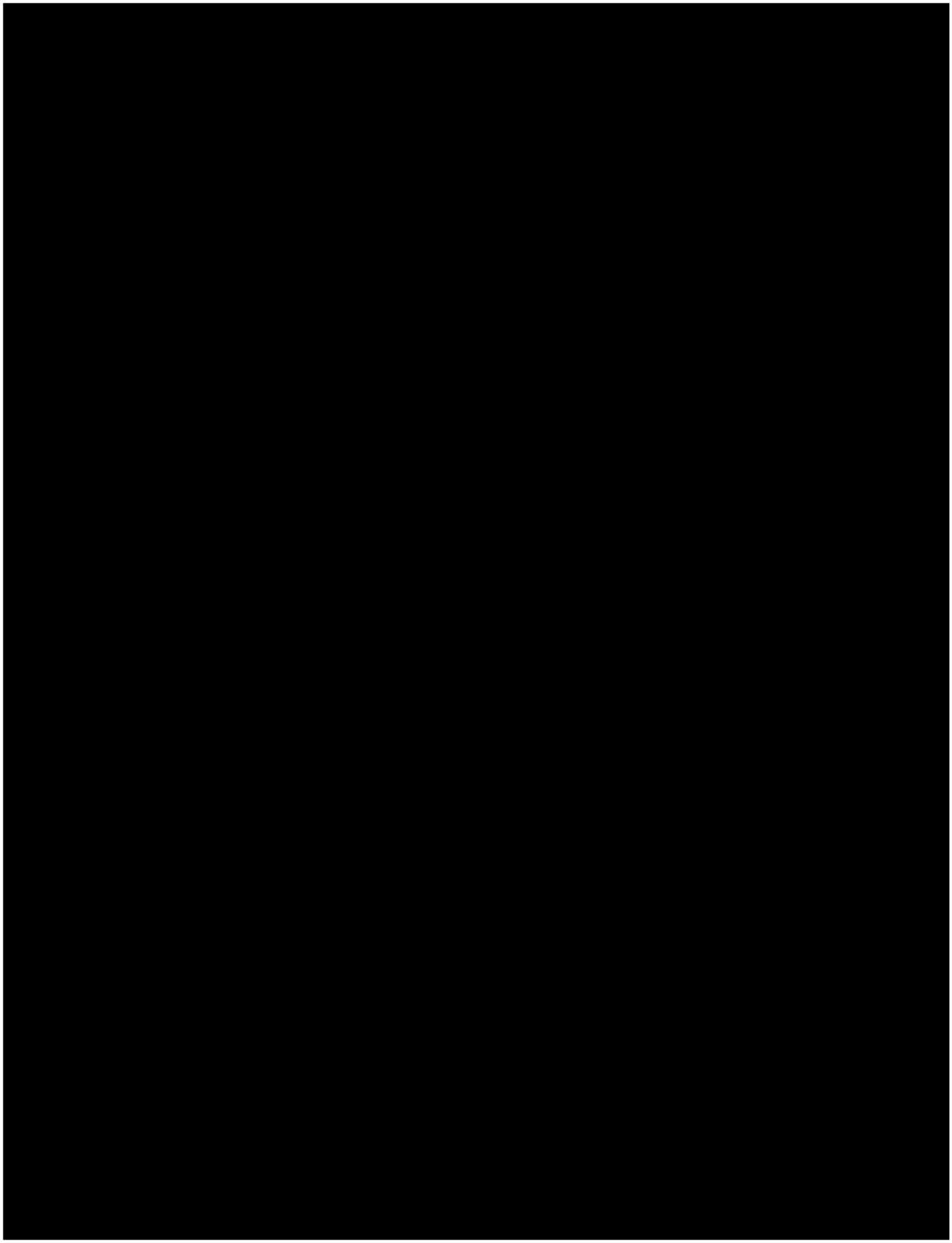
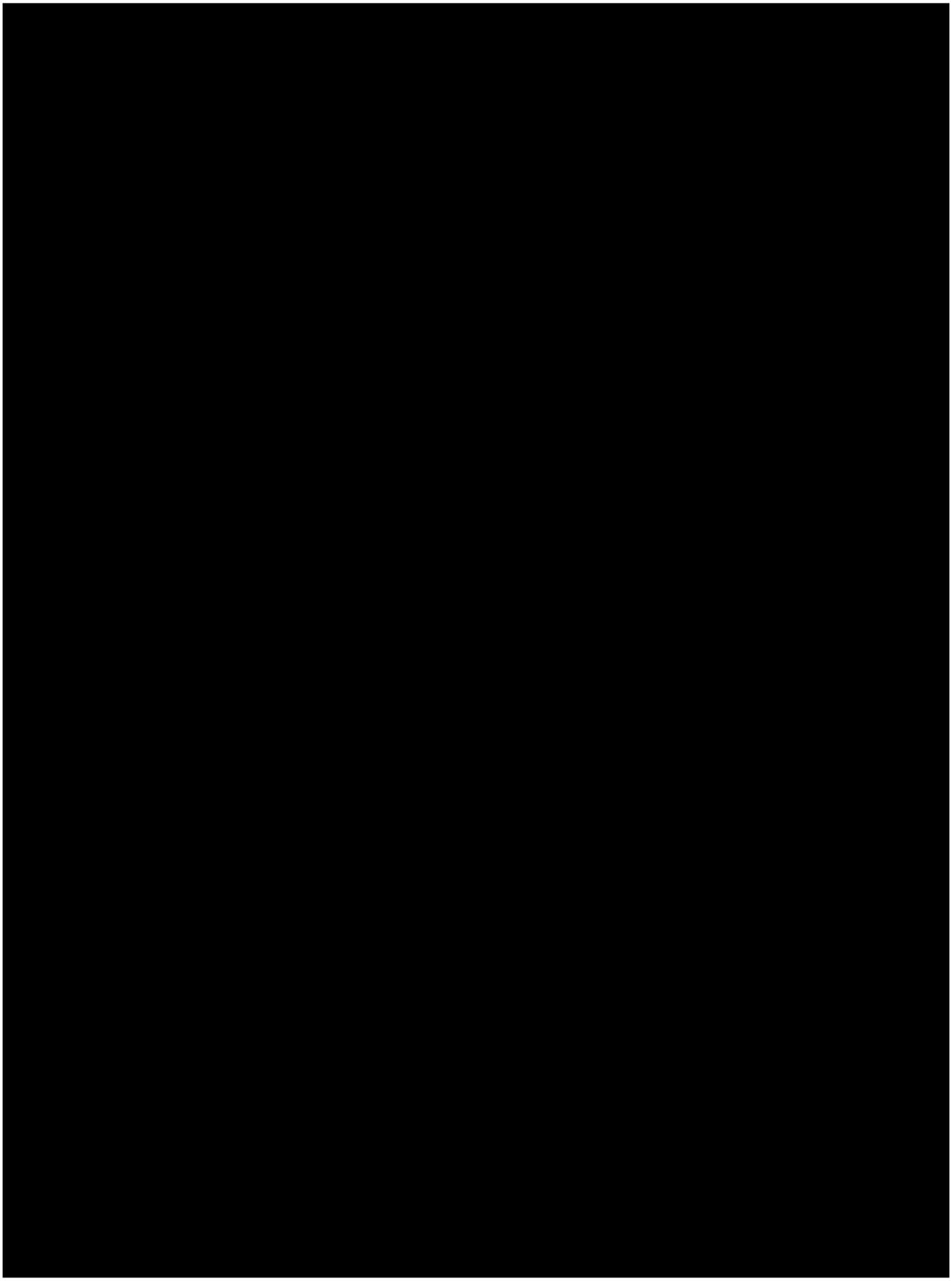
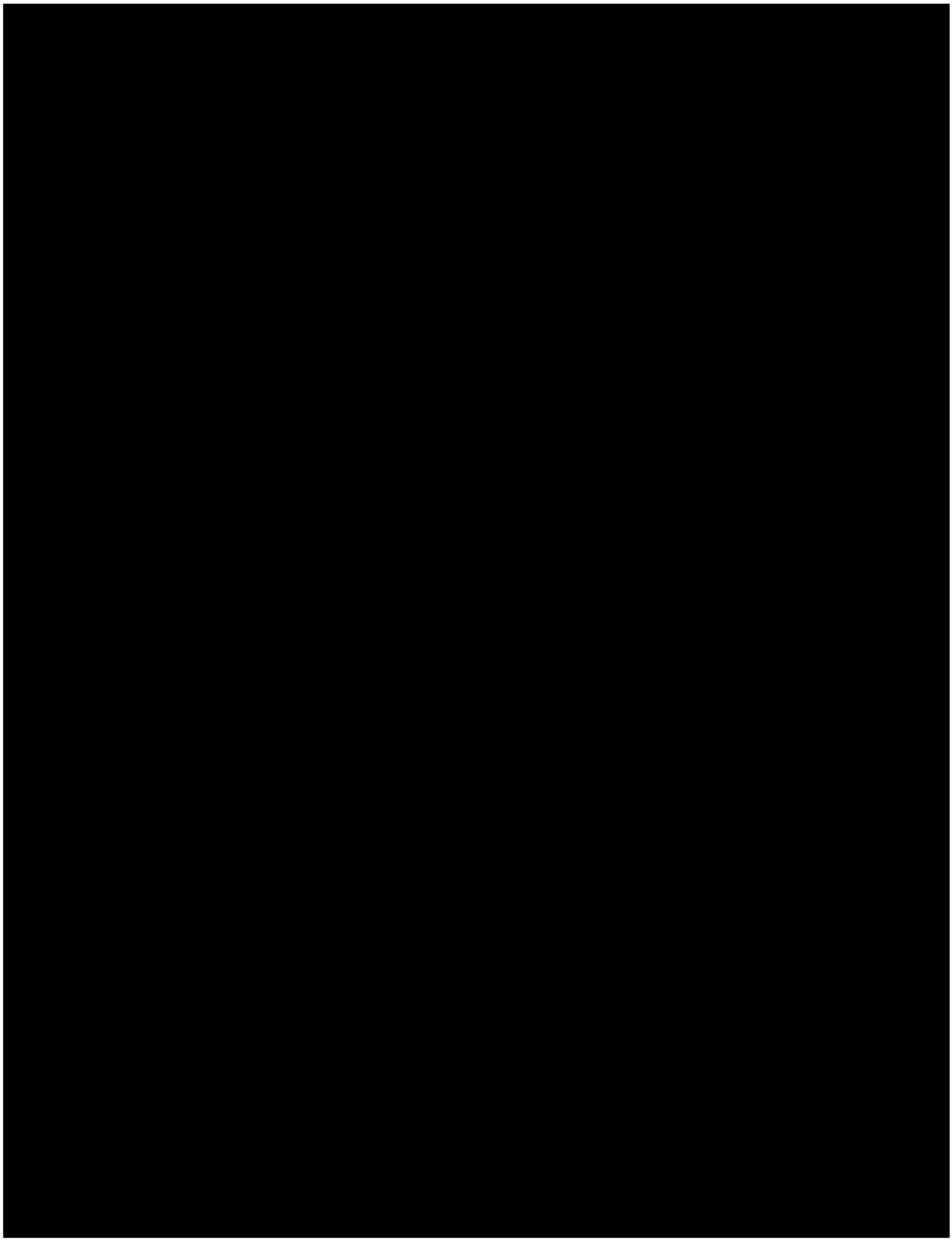
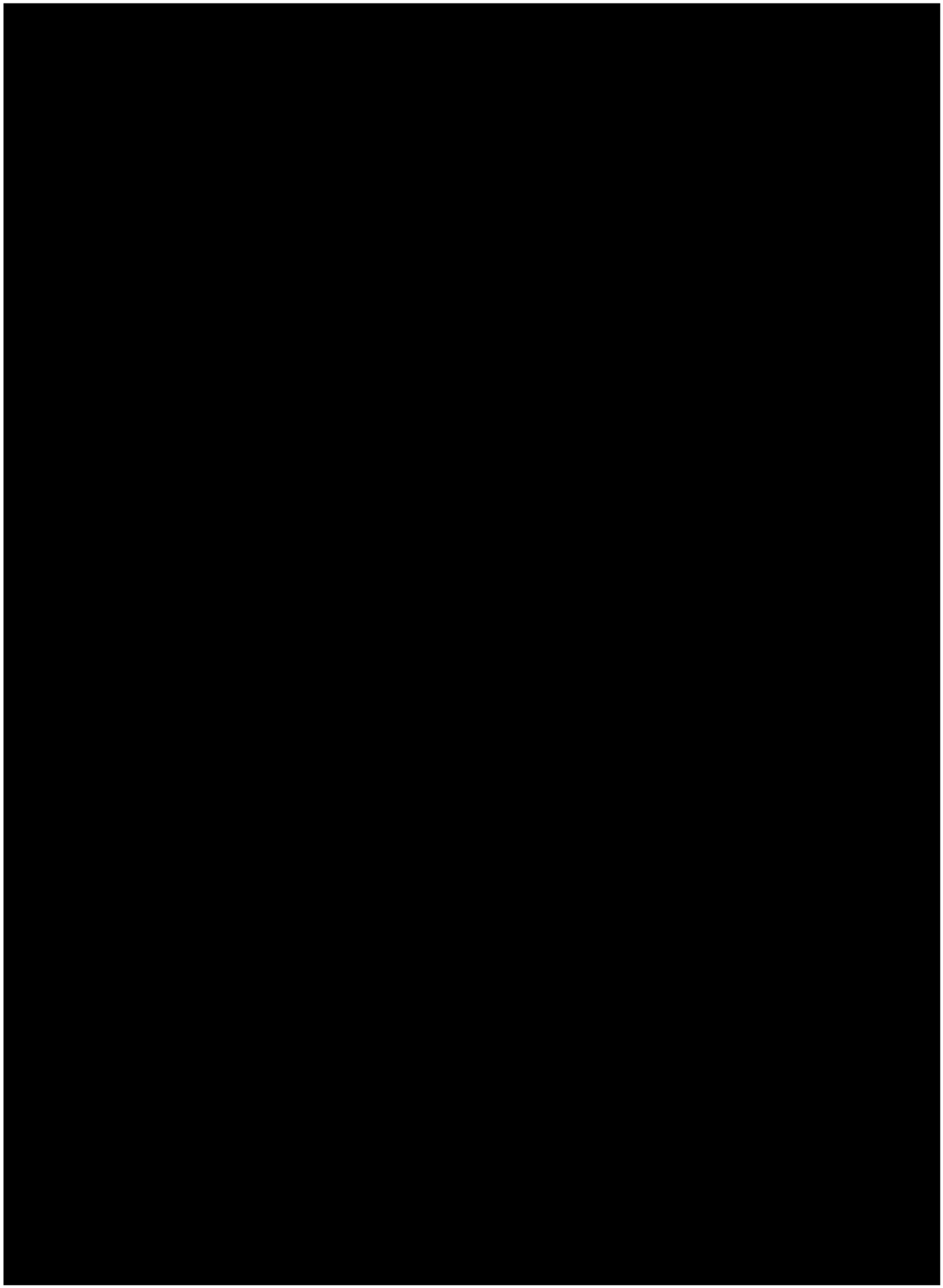


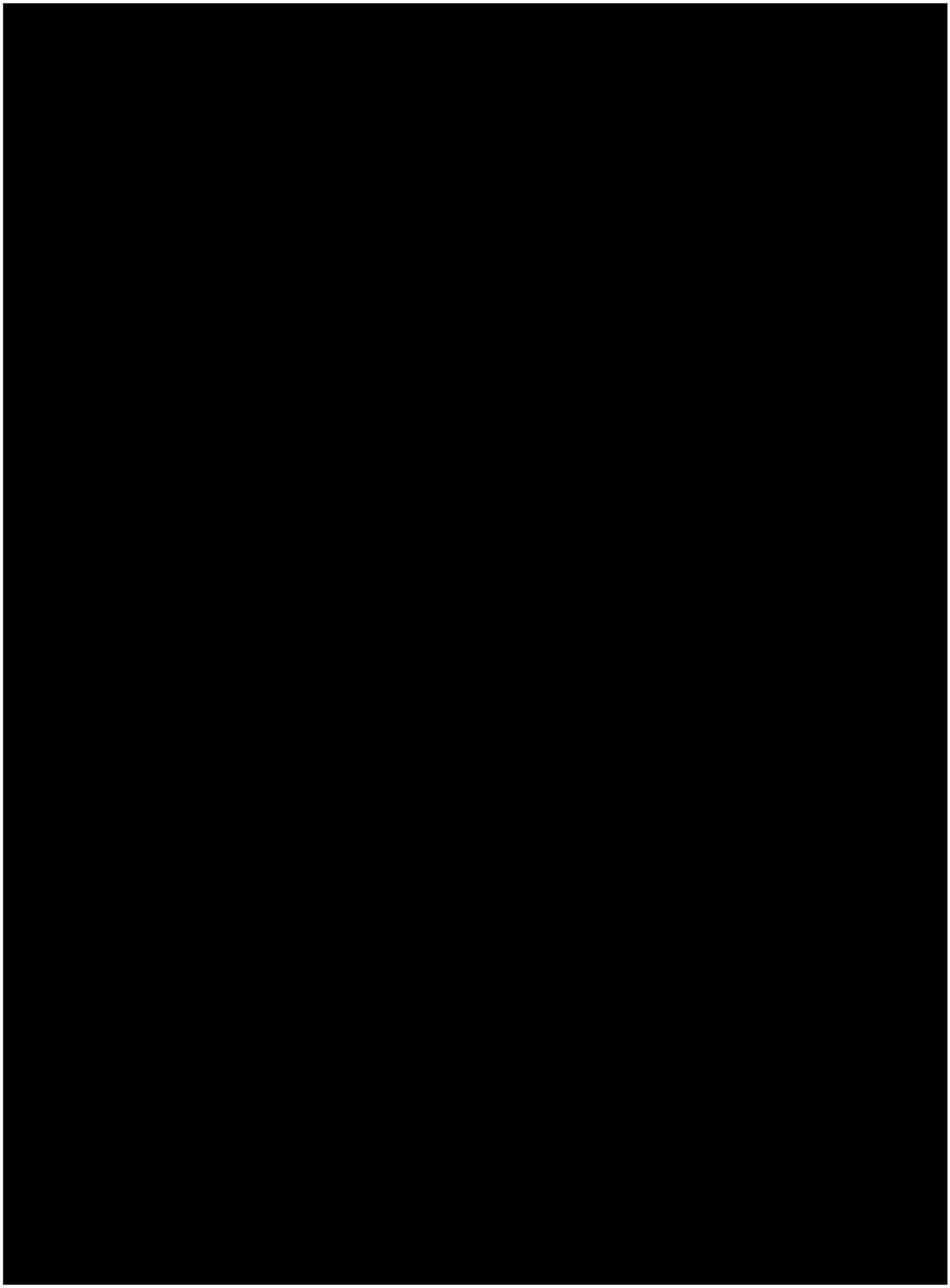
305. LMS has specifically accused Microsoft Xboxes and the HDDs in Microsoft Xboxes of directly infringing the '988 Patent. (*See, e.g.*, Dkt. 1, Compl. Against Seagate ¶¶ 27, 30, 31; Ex. 28, WD Compl. ¶¶ 24, 30; Ex. 31, WD Infringement Contentions at 5.)

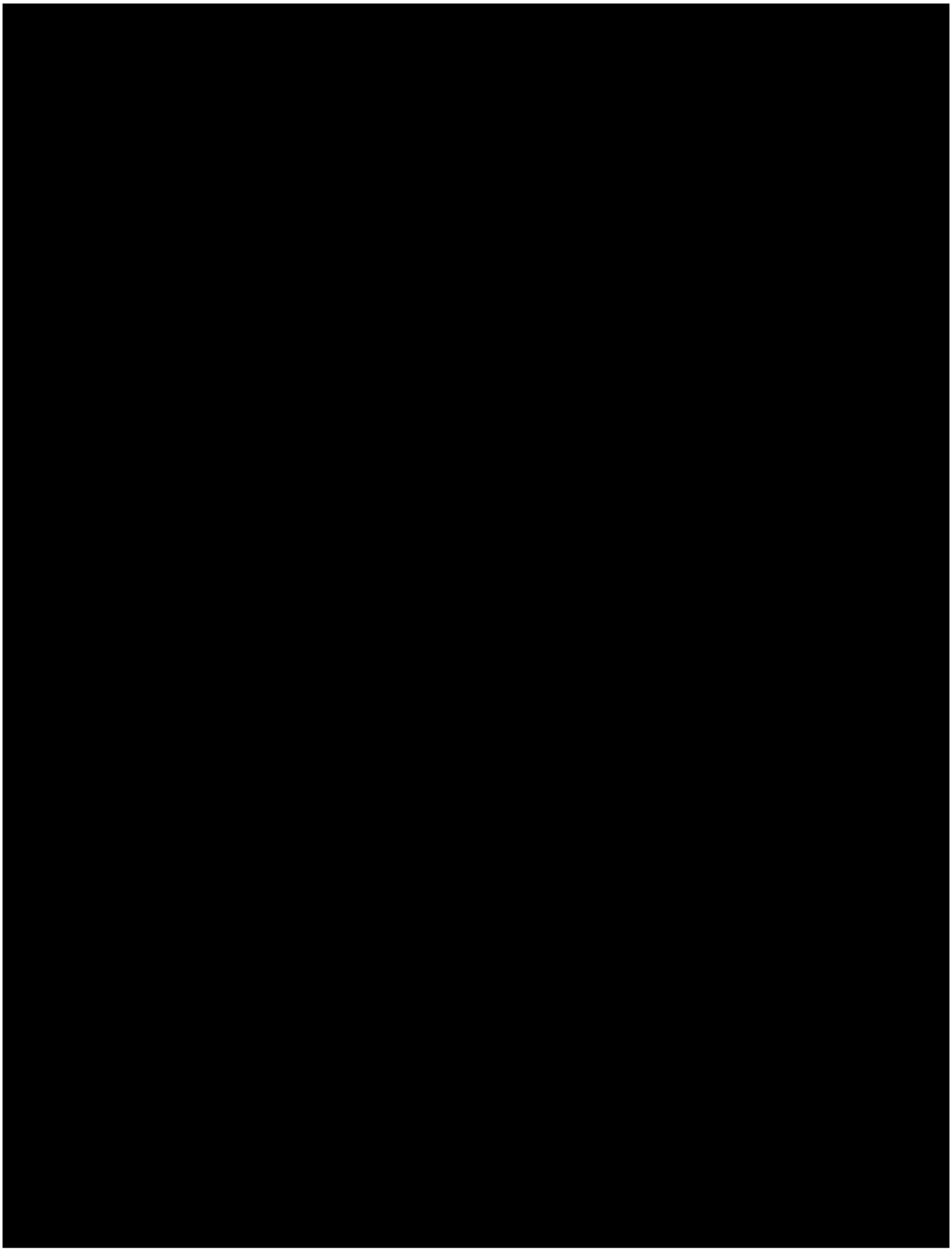


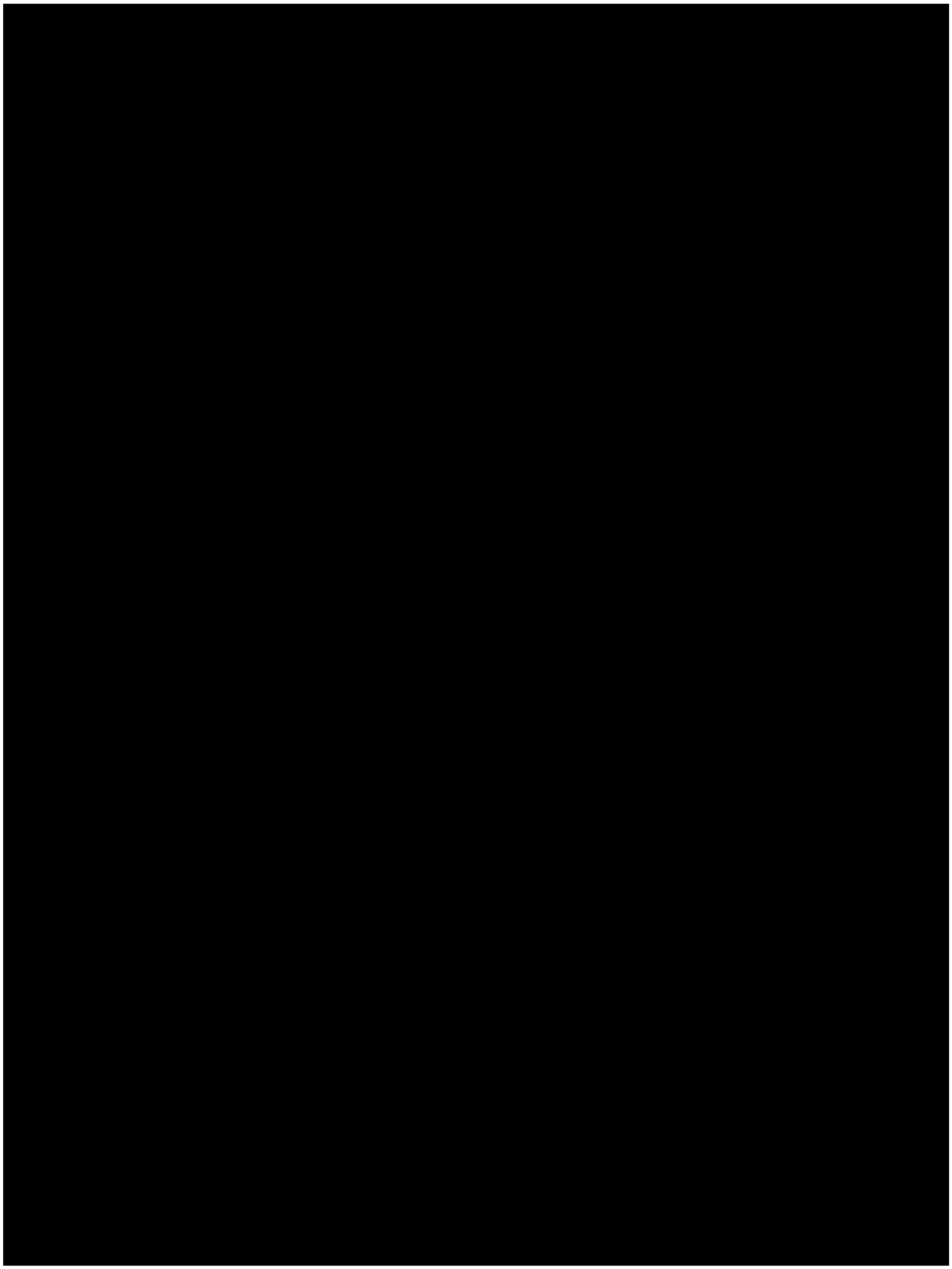


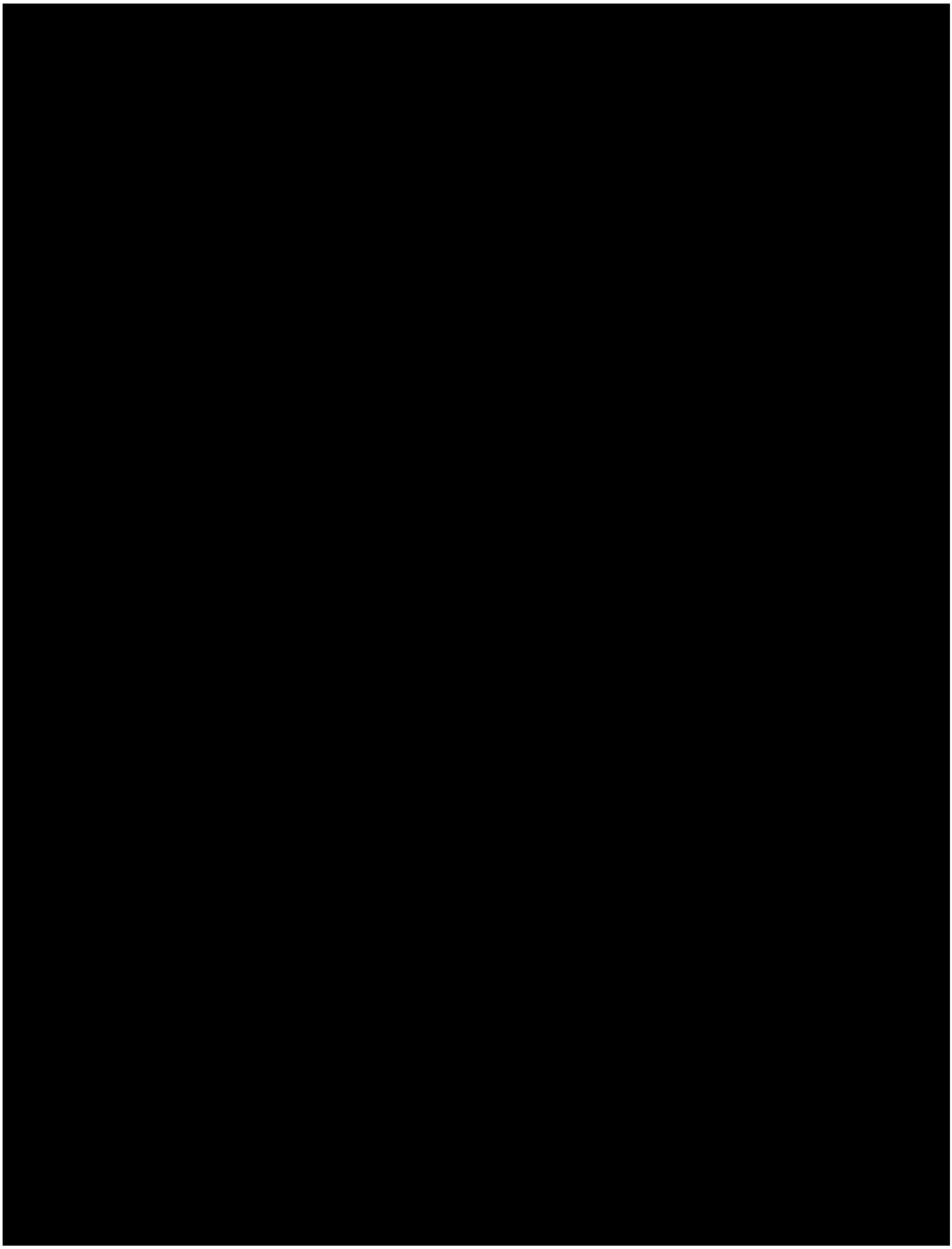


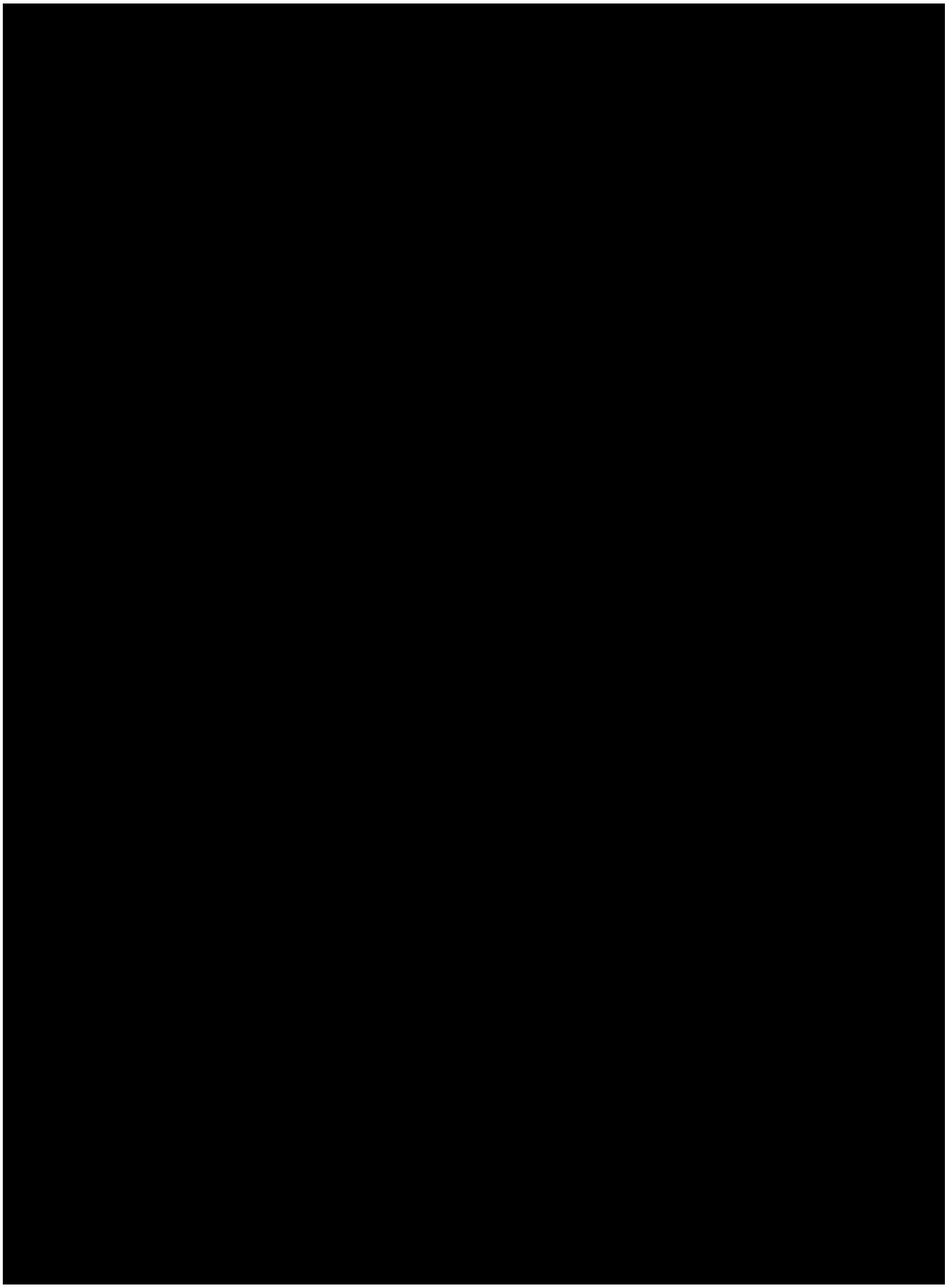












Dated: October 11, 2018

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